THE NEW ZEALAND RED CROSS SOCIETY
HOME NURSING MANUAL No. 2.

FIFTH EDITION

Incorporating INFECTIOUS DISEASES

The New Zealand Red Cross Society

HOME NURSING MANUAL No. 2

(REVISED AND ENLARGED)

Incorporating

INFECTIOUS DISEASES

ACCORDING TO
NEW ZEALAND STANDARDS

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FOREWORD

THIS new edition of the Manual has been made necessary because of the increasing demand for it. Alterations have been made in various details, but the chief one is the enlarging of the chapter on infection, and the change of title to "Asepsis." Its earlier position in the book gives it the necessary emphasis, and provides a basis for various details of nursing procedure which follow. This is in accordance with the teaching and practice of this subject in the nursing schools throughout the country.

Additions have been made to the infectious diseases, which were previously issued as a separate pamphlet.

The details of technique, particularly of spongebathing and bedmaking, vary in the different hospitals, and instructors are advised to teach the methods which are used in the local hospitals. These should be used also for examination. For competition work, however, the methods described in the book should be used.

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INTRODUCTION

The term "nursing" in its fullest sense can be taken to mean the care or the "nurture" of all living things. The mother care of children, the attentions on the sick and injured, and the many branches of preventive and social work such as infant welfare and school health work undertaken by our Plunket Society and Health Department respectively, are forms of nursing.

Nursing in some form has existed from earliest times, though the standard of care given to the sick has varied at different periods of history. Very much has depended upon the progress of medical knowledge, and on the motives which have prompted men and women to care for their less fortunate neighbours. The last century has seen remarkable advances in scientific knowledge, and today there are many illnesses which can be prevented by the application of certain health rules, and our sick and injured have the very best chance of recovery.

The application of this scientific knowledge in the cure and prevention of disease necessitates more complicated treatments, skilled observation and education of the public in health, and for these duties medical men depend upon

trained nurses for assistance. Certain simpler attentions, however, remain the same for anyone who is ill, and these contribute materially toward comfort and recovery. Such care can be carried out by a sympathetic, intelligent and interested woman who has received instruction such as is given in courses on home nursing.

Consider the importance in relation to the comfort and welfare of a sick person, of the making of the bed and arrangement of position, the prevention of pressure sores, the giving of the bed pan and the sponge bath, the attractive service of correct food, and the promotion of sleep and contentment. The cleanliness of the ward and equipment, the ventilation, and the care of linen are also matters which materially affect the patient's welfare. This book describes such simple but essential nursing which may be required in the home, or in emergency conditions in a hospital. The notes given should be used in connection with a definite course of lectures, as only by means of discussion, demonstration, and practice can the requisite skill be acquired. All nursing is of national importance, as the health of the people is a national asset.

QUALIFICATIONS OF A NURSE

Ethics or Moral Qualifications:

There are certain moral obligations which are required of all who have the privilege of caring for sick people, and these may be conveniently studied under the headings of (1) the patient, (2) his relatives and his friends, (3) the hospital, (4) those in authority.

(1) *The Patient:* At all times be ready to give willing and cheerful attention to the needs of the patient. Think for him as much as possible and try to anticipate his wants. Sickness very often changes a person's disposition, and the patient's bad temper and lack of gratitude may be an evidence of ill-health. The patient is also liable to worry over loss of wages, the fear of losing his job or family anxieties. This may seriously affect the patient's physical condition and recovery, and the nurse can do a great deal by her understanding. Imagination is the keynote of how we should deal with patients; try to imagine yourself in the patient's position, and treat him accordingly. Sick people magnify all interests, whether pleasant or unpleasant. A small kindness will cause happiness far out of proportion to the deed, while a tactless remark or hasty manner may produce much distress. Gentleness is a most desirable quality in dealing with people in pain or distress.

A nurse unavoidably learns a great deal about the lives of her patients. She is in honour bound never to discuss with anyone any information with which she may have

become acquainted. The nature of the patient's disease or any other affairs are held in strict confidence. Inquiries even from relatives and friends are not answered direct but are passed on to more senior nurses for answer.

(2) Friends and relatives are treated with kindness, courtesy and great patience. Imagination on the part of the nurse here again plays an important part, and anyone who has had a similar experience in her own family will understand how to act. Telephone inquiries should be answered in the same understanding manner.

(3) To the hospital and those in authority loyalty is very important. There are shortcomings in any institution, but we do not always understand what is at the back of the various plans in organisation, etc., and we must refrain from criticism. It is highly desirable that the patient should be given full confidence in the hospital. The nurse has a responsibility to use care and economy in the use of hospital property.

(4) Respect for those in authority is a very important essential. Loyalty to the physician, surgeon, matron and sisters is a duty demanded of every nurse, because it is extremely important that the patient's recovery should not be retarded by lack of confidence in these people.

Other qualities required of nurses are—

Observation: Serious complications or emergencies may be prevented if the nurse understands her work, knows what to observe and then uses her powers of observation. Observation can be made a habit.

Accuracy and Honesty: Good nursing can only be built on a foundation of absolute truth. Mistakes may occur, but they must be promptly confessed to those who have a right

to know and who are in a position to lessen any ill effect of the error. Make accuracy and honesty in action and speech habitual.

Tact which is the power of appreciating a situation and doing or saying that which is most suitable under the circumstances. In this respect the viewpoint of the other person is necessary. Practice thinking before speaking.

Quality of being Teachable: Eagerness to learn, and an endeavour to become proficient in the smallest duties is necessary.

Discipline means to educate, to bring out your best abilities in orderly fashion. The discipline of desires and emotions which is necessary in a nurse is no easy matter.

Sense of Duty: The conception which an individual holds as to his duty is of great importance to his character. Duty to ourselves implies temperance, courage, self respect and due attention to our own health and wellbeing. Duty to others implies absolute justice, charitable judgment and helpfulness.

The conduct of the nurses in any institution, whether they live in or out of the building, creates its moral tone which is reflected wherever its members may go. It is particularly noticed and carried away by the patients, who retain those impressions and judge the whole profession accordingly.

Physical Qualifications:

Unless a woman be possessed of perfect health, a strong constitution, some degree of physical endurance, and freedom from an excessively high nervous organisation, she cannot give of her best to the work. She can acquire and maintain good health if she follows the rules of personal hygiene which are given in detail in the Hygiene manual.

CHAPTER I.

THE SICK ROOM

The room in which a patient is to be nursed should conform to certain standards, but in the modern small home and flat it is necessary to make any room serve the purpose.

The room should face the north, or receive sunshine for part of the day, but a pleasant outlook may mean more than sunshine for certain types of patients. Quietness is desirable, and the noise from clattering dishes, walking or street traffic and talking should be avoided. A fireplace is desirable both for burning rubbish, supplying heat and assisting with ventilation. Ventilation is also secured by adjustment of windows and doors with the use of improvised screens to prevent draughts. Unnecessary furniture should be removed, and if a vacuum cleaner is not available, carpets should be removed. Care must be taken to prevent marking polished furniture with water, whether hot or cold, and some ingenuity is often required in this matter. An old chair or table is a means of providing a resting place for sponging water, etc., otherwise furniture must be carefully covered.

Darkened rooms are not now considered necessary, but adjustment of lighting is necessary to prevent any glare on the patient's eyes. Bedside lamps are admirable for the patient who wishes to read during the evening.

CHAPTER II.

THE BED

The ordinary hospital bed is 26 inches high, 6ft. 6 inches long and 3 ft. wide. The framework is of enamelled steel or iron, but may be of wood and the castors are well made and move easily. The springs should be of steel links or double woven wire. A high bed is preferable because of draughts near the floor that are not found higher up. Low beds prevent the proper handling of patients, and make the nurse tired. There are many modifications of this bed; a movable back which may be moved forward to act as a bed rest for a sitting position, and levers to lower or raise the top or the bottom or centre of the bed. The bed used for a patient in a private home should conform to hospital standards as nearly as possible in height and width, though improvised appliances would be necessary for raising or lowering the ends, or for providing a back rest for a sitting position.

Mattresses.—These are usually made of horse hair, which is non absorbent and durable. The mattress should fit the bed-stead, and it is a wise and economical precaution to have it encased in a washable cover.

It is important to protect mattresses from becoming wet and stained and this is done by the use of mackintoshes. Mattresses should be brushed regularly to prevent collection of dust in the seams.

Mackintoshes.—The best type for use is that which is "proofed" on both sides. In some cases, it is necessary to have a piece of mackintosh extending the whole length of the mattress. Short mackintoshes are used under the draw-sheet. They are 36 inches wide and have a strip of strong calico stitched to either end, which tucks in well under the mattress, keeping them taut and free from wrinkles.

Pillows.—Pillows are usually about 28 inches long. They must have a strong ticking, and may be filled with either feathers or kapoc. Pillows filled with flock are useful if the patient is to be propped up in bed, but soft pillows should be used under the back and head. They must be protected from becoming wet and stained, if necessary by means of a mackintosh cover under the pillow-slip. Small pillows are useful for placing under an aching limb or back.

Blankets.—These should be light in weight, and large enough to tuck in at the bottom and sides and come well up on to the patient's shoulders. They should not be used doubled, as this only adds to the weight without giving warmth. They are expensive articles and require careful use. They should be protected by the quilt, and by turning the sheet well over at the top and they should never be exposed to dust. Under blankets, or blankets used next to the patient, may be of cotton mixture, such as non-inflammable flannelette.

Linen.—Sheets, drawsheets, and pillow-cases may be made of linen or cotton material. Sheets must be large enough to tuck in firmly all round.

The Drawsheet.—The drawsheet may be made of strong unbleached sheeting approximately a yard wide, and placed across the under sheet reaching from the patient's shoulders

to the knees. When stained, it may be removed and another one substituted without disturbing the patient or removing the bottom sheet. Care must be taken to keep the drawsheet firmly tucked in at either side of the mattress, as creases or wrinkles in it will predispose the patient to bed sores.

Quilts.—The quilt should be of washable material, and if an eiderdown is used, it should be encased in a washable cover.

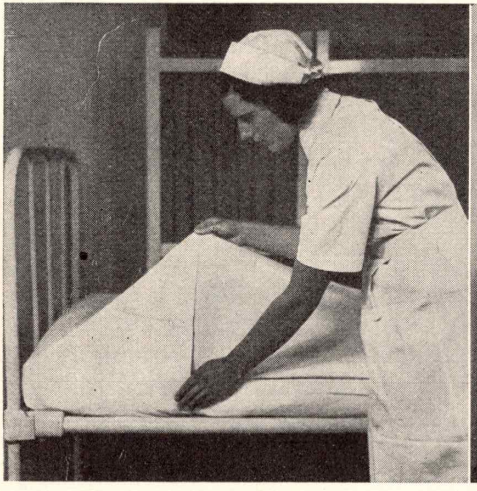
BEDMAKING

In different hospitals there is some variation in the making of beds, but the underlying principles are the same. They are:—(1) The bed must be so made that the patient is comfortable, and will remain comfortable for a considerable time. (2) All that is under the patient must be made taut and without wrinkles, and what is over the patient must be light, warm and comfortably adjusted. (3) The mattress must be well protected against wetting or soiling. (4) The bed must be made without undue expenditure of time and energy, and it must look neat when finished.

Making An Empty Bed.—Articles required: An under blanket, two large sheets, one drawsheet, one mackintosh, two or three blankets, one quilt, two pillows, two pillow cases.

Method.—Collect the above articles and place them on a chair in the order in which they will be required.

Begin making the bed by placing the under blanket smoothly on the mattress, if the blanket is long enough, tuck in 12 inches at the top.



Arranging the "envelope" or mitred corner of the lower sheet.

Completing the "envelope" or mitred corner of the lower sheet.

Spread the bottom sheet on the bed evenly, right side uppermost with the centre fold running down the centre of the bed, tuck in 12 inches at the top, pull down tautly towards the foot and tuck under as far as it will go. Mitre the corners, first at the top on one side, then the bottom and lastly tuck in at the sides pulling the sheet taut and smooth while doing so.

Place the mackintosh on the bed about 12 inches from the top, cover this with the drawsheet, tuck in both firmly and without wrinkles.

N.B.—When tucking in, try to keep the palms of the hands down to prevent finger nails from being broken.

In connection with the comfort of the patient and prevention of bedsores, too much emphasis cannot be placed on the importance of seeing that the under blanket, sheet, mackintosh and drawsheet are tucked in firmly and that all are free from wrinkles.

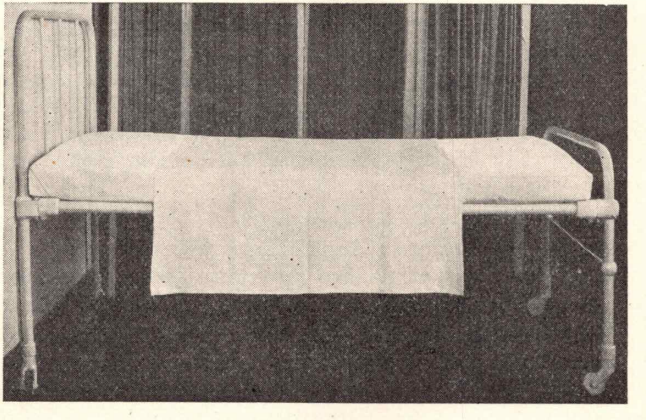
The body blanket, preferably flannelette if one is used, comes next, the sides are folded in to the width of the bed, the top on a level with the top of the drawsheet, and the bottom folded under if necessary. The body blanket can be a flannelette blanket or an old woollen blanket.

Spread the top sheet on evenly, wrong side uppermost, wide hem at top, the centre crease in the centre of the bed, tuck in at the bottom and mitre the corners.

Spread the first blanket over the top sheet placing the top of the blanket about 9 inches from the head of the bed.

Spread the other blankets on evenly and smoothly, and turn the top sheet over the blankets. Tuck all the blankets in together at the foot, then the sides, making neat corners. Place the quilt on smoothly with the centre crease in the

centre of the bed, the top coming just to the top of the bed. Tuck in at the bottom, making mitred corners, leaving the sides to hang. Put the covers on the pillows, shake the pillows until the pillow corners are well into the corners of the pillow cases. Place on the bed with the open end away from the door of the ward.



BEDMAKING

Showing the lower sheet tucked in firmly, and the size and position of the draw-sheet.

Method of Stripping a Bed.—Place a chair at the foot of the bed. Loosen the bed-clothes all round down to the mattress, beginning at the top. Place the pillows on the seat of the chair. Fold the quilt carefully in its original creases, and place it over the back of the chair. Remove the blankets one at a time by folding them from top to bottom once and

taking the fold in middle lift the blanket clear, shake gently, and place over the back of the chair.

The drawsheet and mackintosh are taken off separately. Continue in this way taking care that nothing touches the floor. Turn the mattress from top to bottom.

To Make a Convalescent Bed.—If the bed is being made for a convalescent patient, allow it to air for fifteen to twenty minutes after stripping it. Then remake it in the usual way, but do not tuck the bed-clothes in more than half way on one side, and after the quilt has been put on fold back the bed-clothes on this side in a triangular fashion, leaving an opening. All linen that is soiled should be changed; soiled linen is an offence, but economy in the use of linen is essential.

Making a Bed With a Patient In It.—The bed should first be inspected to see what clean linen may be necessary, and also as to whether clean bed attire may be necessary for the patient, and these should be provided.

Extra articles that may be required are:—An air-ring to give comfort and prevent bedsores for patients who are thin. A bed cradle to keep the weight of the bed-clothes off the painful part, hot water bottle well covered or bed socks to provide warmth, a knee pillow when the patient's knees require to be flexed.

Certain principles have to be considered when about to move a patient in his bed.

1. The patient must always be warned when movement is expected or about to be carried out; if he is unable to help himself or if this is inadvisable, he should be properly helped and well supported during movement.

2. A patient's face should never be covered by a sheet whilst making the bed.

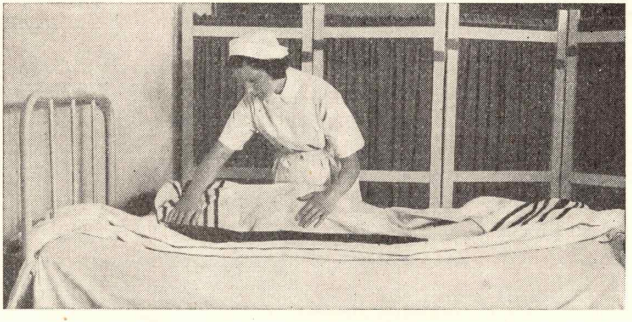
3. The bed-clothes should not be drawn tightly over the patient's body nor taut over his feet. They must be comfortable and the patient must always be able to move his feet easily, and move his legs up and down in bed, and turn over if he wishes.

4. It is essential to have sufficient help. Nurses should never attempt to move a patient who is too heavy for them to lift as this will cause the patient great discomfort, probably mean that he loses confidence in his nurse, and will be the cause of undue and unnecessary strain on the nurse.

Method.—First screen the bed. Loosen the bed-clothes, and remove the pillows except one under the patient's head. Strip the bed in the usual manner, until the top sheet and one blanket remain. Pull up the mattress into position. Turn the patient on his side if this is permissible, carefully supporting his head comfortably while doing so. Fold the top sheet and blanket over the patient lengthwise, exposing the bed, but not the patient. Thoroughly loosen all the under linen, roll the mackintosh and drawsheet against the patient's back, pull the under blanket straight, then the under sheet and tuck both in securely and neatly, making mitred corners at the top and the bottom. Go to the other side of the bed and roll the patient on to his other side, gently withdraw the mackintosh and drawsheet and place them over the chair. Loosen the under linen, straighten the under blanket, then the sheet and tuck in securely as before. Use a bed brush to sweep out any crumbs or fluff in the bed. Next shake the mackintosh and drawsheet free from

crumbs and roll both in under the patient, tucking in securely. Replace the patient's pillows, and air-ring, and lift him into a comfortable position before continuing to make the bed in the usual method.

Method of Changing a Top Sheet.—A clean sheet is spread over the top blanket and both blanket and soiled sheet are skilfully rolled from above downwards until both are withdrawn from over the feet, the clean sheet remaining over the patient, which is then tucked in and the bed remade as usual.

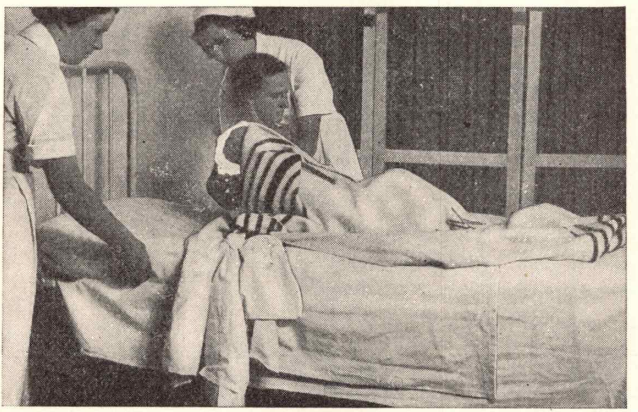


Changing the lower sheet from the side. The patient has been turned on her side, the soiled under and draw sheets rolled to the patient, and the clean sheet (having first been rolled) has been placed in position.

To Change a Bottom Sheet.—One of two methods may be employed:

(1) ***From Side to Side.***—With few exceptions the patient may with assistance be turned on his side. First screen the bed, then remove the quilt and loosen the bed-clothes.

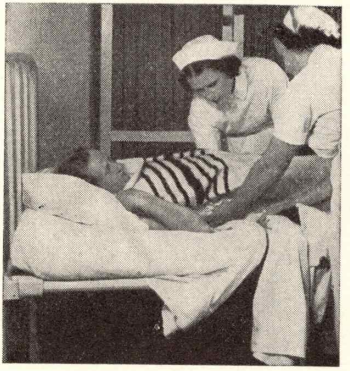
Strip the bed, leaving the top sheet and one blanket covering the patient. Roll the clean sheet lengthwise to the centre and place ready on the chair, then turn the patient on his side, first roll the drawsheet and mackintosh towards the patient's back, then the soiled sheet, straighten the under blanket and place the clean sheet on the bed



Changing the lower sheet of a patient who must be kept in an upright position: One nurse is firmly supporting the patient while the second nurse, having rolled the soiled sheet and draw-sheet down, is placing the upper portion of the clean sheet in position.

with the roll uppermost against the patient's back. Be sure to allow 12 inches to tuck in at the top; tuck in at the bottom and sides securely. Go to the other side of the bed and roll the patient over, gently pull through the mackintosh, drawsheet and soiled sheet, place soiled articles in a

container for soiled linen, leave the mackintosh on the chair, and gently pull the clean sheet through from under the patient unrolling it smoothly until it is quite free; tuck it in firmly at the top, bottom and sides, making sure there are no wrinkles under the patient. The drawsheet and mackintosh are then rolled through and firmly tucked in on either side.



Changing the lower sheet when the patient cannot be rolled on to her side. The clean sheet has been placed in position at the top of the bed; each nurse has one hand raising and supporting the patient and the other hand rolling the soiled and clean sheets down.

(2) ***Changing a Sheet from Top to Bottom*** may be necessary if the patient is not able to be turned on his side. Roll the clean undersheet widthwise almost to its full length, place over the chair in readiness. Fold the ends of the drawsheet and mackintosh over the patient, and remove all pillows from under the patient's head; it is usually necessary to have assistance for this method as the patient must be raised and in some cases three nurses may be necessary. Commencing at the head of the bed roll the

soiled sheet down under the patient's back and place in the clean sheet, the roll uppermost and against the patient's shoulders. Adjust the top and tuck in 12 inches, be careful to have the centre crease in the centre. Gently raise the patient and roll the soiled sheet first, and unroll the clean one alternately until the foot of the bed is reached, then carefully raise both legs and withdraw the soiled sheet, place it in container, and adjust the clean sheet firmly and neatly.

To Change a Pillow.—Place the fresh pillow on a chair near the bed. Place your hand under the patient's back between the shoulder blades, so that the head and neck rest on your arm. With the other hand pull the pillow out and replace it with a fresh one. The pillow should be placed under the edge of the patient's shoulders, and if a second one is used, it should be under the head only.

Before leaving the patient after having made the bed, ensure that he is quite comfortable and has everything within reach that he is likely to require. Adjust locker or table and chairs, remove any equipment used, soiled linen, or dirty dishes, leave the room clean and tidy and efficiently ventilated. The floor is mopped after making a bed.

To Turn or Change a Mattress with a Patient in Bed.—There are several ways in which this can be done. A simple way is to move the patient on to one side of the mattress; pull the mattress over the edge of the bed at the other side; arrange pillows or cushions on the bed in the space left by the mattress, and gently roll the patient on to these. Turn or change the mattress and place it on the bed against the pillows; arrange the lower blanket and sheet

over it; move the patient on to this; remove the pillows, and pull the mattress over to cover the bed, then re-make the bed.

SPECIAL TYPES OF BEDS

Beds may be modified in different ways for the convenience of nursing of a variety of conditions. Some of the commonest modifications include:

(1) Operation bed.

(2) Accident.

(3) Blanket or rheumatism bed.

(4) Fowler's bed.

(1) Operation.—There are various methods of making a bed for the reception of a patient who has had an anaesthetic, but the general principles are always the same.

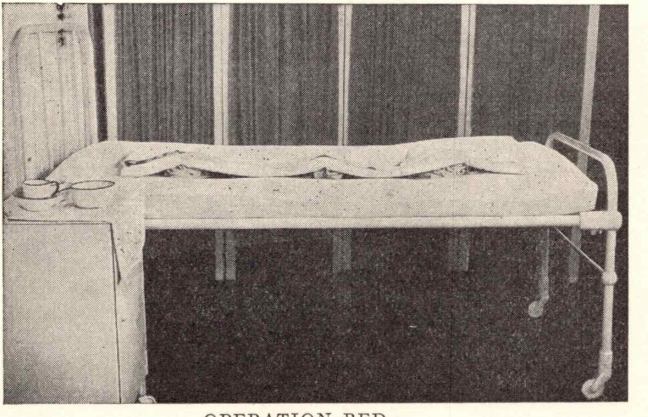
(1) The bed must be ready for use at a moment's notice.

(2) It must be warm and easy to open.

Extra equipment required:—Body blanket; three hot water bags **(well covered)**; mackintosh cover for pillow; mackintosh and drawsheet to protect the top end of the bed; anaesthetic towel.

Make the bed in the usual manner as far as the drawsheet, using clean linen. Next fold a clean body blanket and place it on the bed, and proceed with the top sheet, blankets, etc., but do not tuck in any of the top clothes. Turn the sheet over the blankets at the top, and turn the bed-clothes up at the bottom. Fold each side neatly over to the centre, making a neat package of the upper bed-clothes, which can be quickly removed when the patient returns.

Fill three hot water bags, cover them, and place them in the bed under the blankets. Fold the quilt and place over the lower bedrail. Put screens round the bed.



OPERATION BED.

The ends of the hot-water bags are shown to indicate their position.

On the locker, place the following articles, standing on a tray and covered by a dressing guard.

Vomit bowl, bowl containing cotton wool swabs, bowl containing mouthwash (e.g. glycerine and thymol, 1 teaspoon to 4 ozs. of water), 1 pair artery forceps to use as swab holders, 1 pair tongue forceps, bowl for used swabs, two guards. Have bed blocks in readiness also.

If the operation is on the leg or the foot, or any special area from which there is likely to be oozing of blood, an extra mackintosh should be provided to protect the area.

When the patient returns, remove the quilt and fold it, and place it over the back of the chair. Remove the packet of bed-clothes and the hot water bags. Lift the patient on to the bed, and cover with the warm body blanket, at the same time removing the blankets which have been round him. Turn the patient and remove the stretcher, cover the patient with the remaining bed-clothes by placing the packet on the bed and unfolding the top over the patient's chest, the bottom over legs and feet. Tuck the sides and bottom in firmly. Put the anaesthetic towel round the patient's neck, and the kidney tray in position.

Accident Bed.—Hospitals have slightly different methods for making this bed, but the main principles are:—

(a) To provide warmth for treating shock.

(b) To prevent soiling of mattress and pillow.

(c) To prevent unnecessary movement.

Firm boards are placed under the mattress.

The bed is made up in the usual way . . . with the draw-sheet in the usual centre position; place a second draw mackintosh and drawsheet at the top of the bed and one at the lower part, each one overlapping the other a little. Any one of these is easily removed if soiled. A pillow which has a mackintosh cover under the linen one is usually provided. Hospitals usually have special blankets for receiving accident patients. One of these is now placed over the bed, and on it are placed three hot water bags in double covers. The second "special" blanket is folded in two and placed over the bags. The remaining bed clothes are then arranged in

a packet as for the operation bed, and placed over the folded blanket.

(In some hospitals, special mattresses are used. These are divided into four pieces—an upper and lower and two centre ones.)

Blanket Bed.—In this bed the patient lies between blankets either woollen or flannelette. The bed is made in the usual way, but the blanket is placed over the bottom sheet and if long enough is tucked in at the top rather than the bottom. This secures it, preventing it from slipping down and becoming wrinkled. Next to the blanket is placed the mackintosh and drawsheet to protect the blanket from soiling. The upper blanket is placed over the patient and is not tucked in, it should not be too high so as to irritate the patient's chin. A bed cradle is next placed over the patient's limbs to keep the weight of the clothes off them. The blanket lies loosely under the cradle. The limbs will probably be supported on pillows if they are very painful. The bed is finished in the usual manner, with the top sheet next and one or two blankets. The first blanket is put on in the usual manner but the second one or last blanket is placed crosswise and is tucked in firmly on both sides of the cradle and at the foot of the bed—this is covered by the quilt. The number of pillows used will be according to the patient's condition.

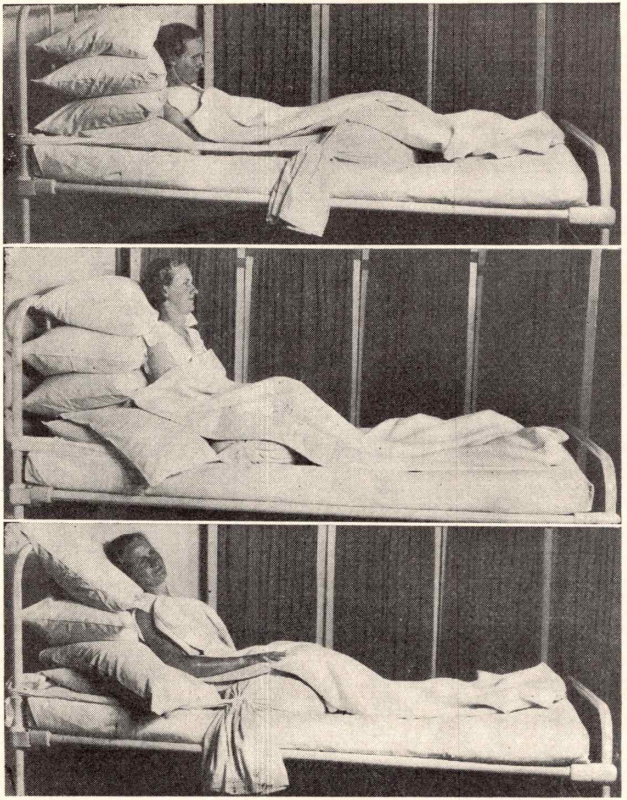
Fowler's Bed.—Fowler's position is the sitting position in bed, and is used for patients with difficult breathing as in chronic heart failure, and pneumonia, after certain operations to promote drainage, and to relax abdominal muscles, thus giving comfort and lessening strain on the wound.

Beds specially constructed for this purpose are used in hospitals, but an improvised bed can be very comfortable and efficient. The principles of a "Fowler" position are a support for the back to enable the patient to be maintained in any sitting position, and a support under the knees to prevent the patient slipping down in the bed. The back rest can be made from a large piece of board, or canvas stretched tightly across a frame; one side of this frame rests on the bed and the other leans up against the upper bar of the top of the bed. A small straight chair bottom side up, placed on the bed so that its legs lie against the head of the bed and its back forms an inclined plane, also serves very well. Any form of rest must be tied securely in place. Pillows are placed against this rest, with one on each side for arm supports. The bed can also be raised slightly at the foot with small blocks to prevent patient from slipping down the bed.

The support for the knees can be made by rolling a pillow in a drawsheet, and tying the ends, near the pillow, with long ties made of old sheeting. When the pillow is placed in position under the knees, the ties are fastened firmly to the top of the bed. The pillow used for this purpose should have a mackintosh cover, or the completed bolster should be placed under the edge of the mackintosh drawsheet. For certain operations this pillow is now replaced by a small soft pillow. The patient requires a cape or bed jacket when in this position.

GETTING A CONVALESCENT PATIENT UP

When getting a convalescent patient up take record of pulse before getting up and after putting her back to bed. A lounge or comfortable chair should be prepared. Warmth



Top: A "Fowler" position with three faults. (1) The pillows have not been arranged properly. (2) The patient has not been sat up sufficiently when the bed has been made. (3) The bolster has not been fastened securely. Middle: Correct position. "Upright" Fowler's position. (The shoulders and arms would be covered by a bed-jacket, cape or shoulder-blanket.) Bottom: Correct position. "Semi-Fowler's" position. The draw-sheet which encloses the pillow and mackintosh is shown to its end, to indicate the manner of tying. A reef-knot is necessary for the tie.

is important as a sick person feels the cold more readily and is more liable to catch a chill. A rug should be placed on the chair allowing plenty at the top so that when the patient is sitting in the chair the rug will come well up at the back and yet reach down to be round the legs, keeping out any likely draughts. Cushions should next be arranged in such a way as to support the patient comfortably. A foot-stool is then placed in position. The patient's hot water bottle is refilled, and her dressing gown, stockings, and slippers put out. After the dressing gown and stockings have been put on, the patient is assisted to swing her legs over the side of the bed for her slippers to be put on. She is then assisted into her chair, carefully wrapped up in the rug and given her hot water bag either on her lap or at her feet. The nurse should see that the patient has a book or is wheeled into some other position to give her a change of surroundings, perhaps in front of a window overlooking a garden or next to another patient or, if the weather is cold, by a fire. Draughts must be carefully avoided.

If the patient is only up for bed-making she is better left near her bed.

The bed is now made ready for the patient's return. It is made up in the usual way, leaving the upper bed-clothes turned back on completion. A hot water bottle is filled and placed within.

Convalescent patients must be watched for any signs of fatigue, and the time of being out of bed should be gradually increased as doctor orders.

A Cradle is often necessary to prevent the weight of clothes from resting on the body or limbs. In hospital these are made of half hoops of iron; in a private home they

may be made of a box with lid and ends removed, or a three-legged stool.

Rubber Air Rings and Water Pillows are procurable and assist in giving comfort to very ill or emaciated patients, and in preventing bed sores. Water pillows are about 3 feet square, or 3 feet by 2 feet. Place the pillow on a flat surface, expel air, and fill with warm water (100° F.). Expel air carefully before inserting stopper. To gauge the correct amount of water, press one hand on the centre, and it should only just touch the surface beneath, while the two hands placed on the pillow at the same time, about 10 inches apart, should be unable to feel the surface beneath. The pillow should be placed under the drawsheet, but have a second linen covering intervening between draw mackintosh and water pillow.

A rubber mattress or a full sized air or water bed is very useful in some conditions.

Air rings should not be filled too tightly.

Care of Linen, Blankets, etc.

All hospital equipment must be handled carefully, and this applies particularly to linen, blankets, mattresses, etc. These are very expensive items, and should be treated as if they were personal property.

Bed linen must at all times be kept scrupulously clean, but economy can be ensured by the nurse exercising forethought in such matters as careful removal of bed pans, protection of gown and sheet by serviette during meals, etc.

Linen should be used only for its correct purpose. Torn linen should be put aside until mended. Soiled linen should be soaked immediately, and washed free of stains before

complete laundering. Infected linen is kept separate from regular ward linen.

Linen, blankets and other articles must never touch the floor. All linen in danger of being soiled by vomit, blood or other discharge should be protected by mackintosh and draw-sheet.

Used linen from beds should be placed immediately into a container and not carried against nurse's uniform.

Care of Rubber.

Rubber goods in use should not be creased or folded, and they should be protected from friction or injury. Pins must not be put through them, neither should they come in contact with hot water bottles.

Mackintosh articles on the bed should always be covered by a cotton or linen cover; two rubber surfaces must never be permitted to be together. Any fluid spilt on them should be wiped off at once. Oil is very injurious.

Mackintoshes are cleaned by washing with soap and water and hanging on a rail to dry. They are stored by hanging on a rail or rolling carefully on a pole.

Rubber air-rings and hot water bottles are cleaned in the same way. Ice-bags, water-pillows and hot water bags must be thoroughly dried before being put away, and it is advisable to inflate them slightly so that two surfaces do not lie together. Valves of air-rings should not be immersed in water as it spoils them.

Rubber goods should not be kept too long in storage as it spoils them.

CHAPTER III.

THE CARE OF THE PATIENT

The toilet of the patient includes the passing of urine and bowel motions, a bath, cleansing the mouth and teeth, brushing and combing the hair, and having the bed made.

THE USE OF THE BED PAN

When giving a bed pan to a patient, the bed should first be screened, the quilt folded back and the bedclothes loosened; the bed pan should be warmed, covered, and taken to the bedside with toilet paper. It should be placed gently beneath the patient in the proper position, and if necessary the patient should be assisted to raise the buttocks by the nurse placing the flat of her hand beneath the pelvis and sliding the bed pan into place. Prop up the patient in a comfortable position, and place the toilet paper within reach; if a male patient, a urinal is also left with him. Do not leave the patient longer than five minutes without enquiring if she needs attention. When removing the bed pan, support the patient as before, and place the covered pan on a chair. Give the patient a basin of water, soap and towel for washing her hands. Finish by leaving the patient comfortable and the bed tidy. The bed pan is removed to the sanitary block and emptied, rinsed in cold running water, mopped out and scalded under the hot tap, and if in a hospital placed in the sterilizer to boil for five minutes

before replacing on the rack. The mop is then rinsed and replaced in disinfectant.

The patient should be covered warmly, and the room aired after the bed pan has been removed.

For helpless patients and for those who are very ill, it is necessary to have a second nurse standing on the opposite side of the bed to assist in raising the patient for the insertion and removal of the bed pan.

For patients who are unable to attend to their own toilet a kidney tray containing a small bowl of warm water and some pledgets of wool and forceps should be taken to the bedside. On removal of the bed pan, the patient is turned gently on her side and cleansed with moistened pledgets of wool held in forceps, leaving her dry, clean and comfortable.

At the completion of any bed pan procedure the nurse must immediately scrub her hands with care and thoroughness.

Principles of Bed Pan Technique.

(1) To prevent unnecessary exposure.
(2) To avoid injury to the back.
(3) To prevent unnecessary exertion.
(4) To observe any abnormalities in the stool.

THE BED BATH (OR SPONGE BATH)

The purpose of the bath is:—

(1) ***To refresh*** the patient and relieve discomfort from position, heat and moisture.

(2) ***To cleanse*** from external dirt and decomposing substances, e.g., perspiration, which is irritating to the skin and gives rise to unpleasant odours.

(3) In some instances it is given to **promote** sleep.

(4) To reduce the temperature.

The skin is an important organ by which the body rids itself of waste substances through small glands opening on to the skin surface. It is necessary to keep the skin scrupulously clean so that these tiny glands do not become clogged with dirt, thus preventing the skin from performing this important function. In certain diseases such as Rheumatic Fever the patient perspires freely and requires sponging two or three times a day.

Another important function of the skin is to aid in regulating the body temperature. Blood which has become heated through chemical changes taking place in the body passes through tiny blood vessels under the surface of the skin and as it flows it becomes cooled by loss of heat through radiation and evaporation (heat changing perspiration into vapour). In disease this important function may be interfered with and daily sponging is necessary to stimulate the action of the skin and sometimes it is done more often than once a day for this purpose.

A third important function of the skin is its connection with the brain by special nerve endings sensitive to touch, so that a bed bath given efficiently can be soothing and in some cases it is used as a means of promoting sleep.

Special points in bed bathing.

(1) The room should be warm, with no draughts.

(2) Everything must be in readiness at the bedside to avoid delay.

(3) Bed baths should be given quickly so that the water does not become cold or the patient tired, and yet

not so rapidly that a sick patient feels hurried. Twenty minutes is sufficient for the whole procedure, including preparation and clearing up, ten minutes for the actual washing.

(4) Unnecessary exposure must be avoided.

(5) Temperature of the water 110° F.

(6) Wash with firm but gentle pressure.

(7) Let the patient think that he is your only concern for the moment and do not appear to have your mind on work ahead of you.

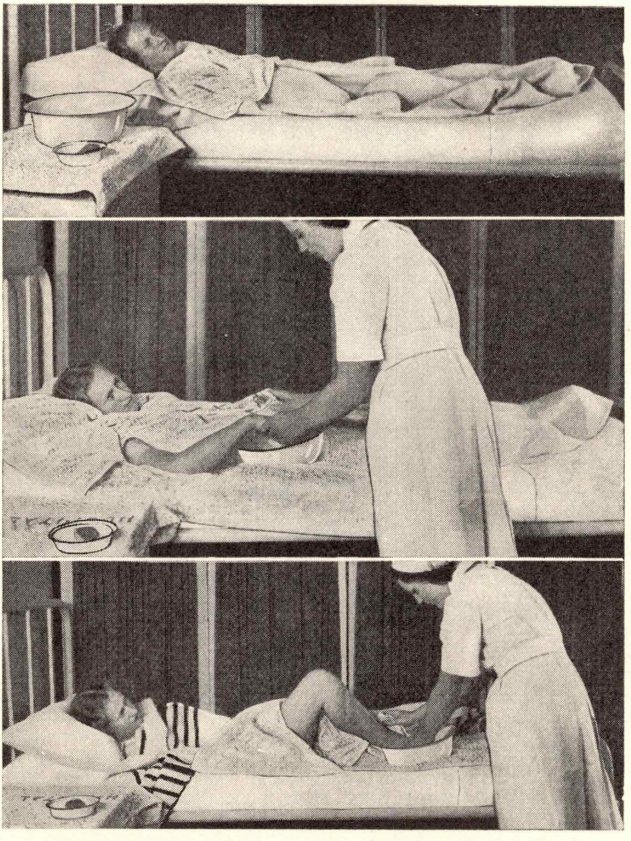
Articles required.—Two bath towels and face towel (in many instances only two towels are available), two washing cloths, one for the face, neck and arms and chest; the other for the lower abdomen, lower limbs and back. Basin of hot water. Soap in a soap dish. Nail scissors. Clean linen. Bath alcohol. Talcum powder. A pail for soiled linen. Hair brush. Articles for cleansing the teeth. Extra jug of hot water and bucket.

(If the patient is in a private home, two old blankets may be kept for bed bathing. One of these is rolled under the patient, and the other placed next to him, above. These are not now used in hospitals, unless separate pairs of blankets can be kept for each patient, as there is always a danger of spreading unrecognised infections by this means. In place of these special blankets, a careful arrangement of towels prevents any moisture reaching the bed-clothes.)

Method.—Close the windows and draw down the blind if overlooked. Place screens round the bed if in a ward with other patients. Give the bed pan if required. Refill the hot water bag if the patient has one.

Arrange articles on the locker on the right-hand side of the patient, placing clean linen on a radiator to warm if possible. If the towels can be warmed conveniently it adds to the comfort of the patient. Fold the quilt neatly and place over the back of a chair at the foot of the bed. Loosen the upper bedclothes, remove all blankets but one, and remove the sheet from under the blanket, leaving one blanket covering the patient. Remove all pillows but one from under the patient's head if his condition permits; air rings and knee pillows must also be removed. The patient's garments are next taken off, leaving the covering blanket alone over the patient. Place one towel under the patient's head and arrange the other over the chest and under the chin. The placing of towels should be done deftly and accurately in such a way as to protect the bed linen from any splashings or dampness. (If the weather is chilly, two blankets or one or two doubled ones will be necessary over the patient during the bed bathing.)

Using the face cloth, wash the eyes and surrounding area. Wash the face, neck and ears, using soap only if the patient desires it. Then dry thoroughly with a firm even pressure. Expose the right arm, placing one towel under it and well up under the armpit, and the other over the right side of the chest and side, protecting the blanket. Place the basin of water on the bed and allow the patient's hand to be in the water; if there is an assistant she will steady the basin. Lather the washer well and thoroughly soap the arm, including the armpit. Use long up and down strokes when washing the limbs; rinse with plenty of water, moving the basin up under the elbow and bathing over the arm. Replace the basin on the locker and dry well, paying



Top: The patient is arranged for the sponging of the face and neck; one towel protects the pillow while the second is ready for the drying of the face. Middle: Sponging the arm and hand; notice the towels protecting the bed, clothes and pillow. Bottom: Sponging the foot and leg.

particular attention to the armpit. The assistant exposes the other arm and places the towels and repeats the same procedure, passing back the bowl of water before drying the arm. The upper part of the chest is next exposed, placing the towels one on either side, tucking the edges under the blanket. A circular movement should be used when washing the chest, abdomen, or back. Rinse, then dry, paying careful attention to drying under the breasts in a female patient. The lower abdomen is next exposed and washed in a similar manner, special attention being paid to the umbilicus and groins. If the water requires to be changed, it should be done at this stage. The lower limbs are each exposed in turn, one towel arranged well up under the thigh and protecting the upper blanket. The basin is placed on the bed, the knee is flexed and the patient places his foot in the water, plenty of soap and water should be used but avoid flicking water about. Wash carefully between the toes. The basin should be moved up under the knee and the limb bathed, the basin then replaced on the locker, the limb dried, being careful to dry between the toes. The same procedure is carried out on the other limb. The patient is then turned, if his condition permits, to have his back washed and treated. The towels are arranged to protect the bed linen, the upper part of the back being done first. To promote the circulation over the shoulder blades and buttocks, lather the hand with soap, and with a brisk circular movement rub the soap well in, then rinse with the washer and dry. Bath alcohol may also be used in this way for the same reason. Elbows and heels should also be rubbed well when the patient is confined to bed for any length of time. Powder, either talcum or zinc and starch, is dusted

over afterwards. If the patient is quite helpless or is very sick the nurse must wash the genital region, and it is best done at this stage, the knee can be flexed and thorough toilet carried out. If the patient is well enough he will do this for himself. The nails are cut if necessary.

The drawsheet is next rolled out and shaken free from crumbs, a clean one being rolled in if necessary. The mackintosh should be rolled out with the drawsheet. The undersheet is changed if necessary. Towels are placed on the radiator to dry and the gown or pyjamas put on the patient. The bed is next made, using clean linen, where necessary, each pillow should be shaken separately before replacing. After the bed is made the hair is brushed and tidied, then the patient cleanses his teeth if well enough, otherwise the nurse sees to the cleansing of the mouth and teeth. Basins and soiled linen should then be removed to the sanitary block, the screens put in their correct place, blinds pulled up and the window opened. The patient is offered a hot drink.

CARE OF THE MOUTH

Care of the mouth and teeth is essential in health, but infinitely more so for a sick person. A dirty mouth causes discomfort and loss of appetite; it may lead to septic infection of the gums and glands or cause ulcers on the lining membrane of the mouth. Very sick patients require their mouths treated before and after meals and fever patients require attention every few hours during the day and night. Patients who can manipulate their own tooth brush can cleanse their own mouths more efficiently and comfortably than anyone else can do for them.

Method.—A towel is spread under the patient's chin and the tooth paste put on the brush and handed to the patient with a kidney dish to spit into, a mug of water being held in readiness for the patient to rinse his mouth.

For very sick or helpless patients a tray should be prepared with the following articles:—A bowl of swabs; glycerine and borax or some other lotion; artery forceps; a kidney bowl for used swabs; a mug of mouth wash and kidney bowl for rinsing; an extra clean bowl or mug is required if the patient has artificial teeth.

Suitable covering to be used over tray such as a square of clean linen.

Improvise with plate, cup or other utensil, cotton wool over toothbrush to clean mouth.

Lotions may be:

Sodi-bicarbonate:	½ teaspoon to 8 ounces of warm water.
Potassium chloride:	1 teaspoon to 8 ounces of warm water.
Listerine:	1 teaspoon to 8 ounces of warm water.
Salt:	½ teaspoon to 8 ounces of warm water.
Glycerine & Thymol:	1 teaspoon to 6 ounces of warm water.

Juice of a lemon to a cup of warm water.

Method.—Place the towel under the chin, explain to the patient what you are going to do. Using the forceps, pick up a swab and moisten it with lotion. Swab gently but thoroughly each area of the mouth, gums, teeth and tongue with separate swabs. Do this in a definite order—e.g., between gums and cheek on each side of lower jaw; then on each side of upper jaw; on inside of lower and upper

jaws; then the teeth in the same order and then the tongue. If the patient is able, allow him to rinse his mouth out, otherwise use further swabs moistened with lotion for cleansing. Dry the mouth, replace the towel, and remove the tray. Avoid touching the soiled swabs with your fingers.

Artificial Teeth.—First remove the denture into a bowl and take it to the sanitary block or sterilizing room and scrub well with a clean boiled nail-brush or the patient's own tooth brush under running water, then immerse it in clean water and return to the bedside, cleanse the mouth as above, then gently replace the teeth.

Articles used must, if possible, be placed in a receptacle and boiled after use. Otherwise they must be kept very strictly for the use of the patient only. The nurse must wash her hands thoroughly after any of these procedures.

THE CARE OF THE HAIR

All patients whether male or female should have their hair brushed at least twice a day. This not only adds to a well cared for appearance of the patient, and keeps the scalp clean and healthy, but adds to the comfort. In combing or brushing the hair, take small strands at a time, and to prevent pulling, hold the strand from above, so that the pull comes on your hand.

To Remove Tangles from Neglected Hair.—The tangled portion may need to be cut out if it is very matted, but this condition should never occur in a hospital, or when a person is receiving correct nursing care. To remove tangles, moisten the comb with alcohol, and with patience and skill, taking a strand at a time, gradually remove the tangle. Long hair should be braided in two plaits.

Hair Shampoo in Bed.—Washing the hair in bed is often necessary when a patient is first admitted to hospital, or during her convalescence; if she is in bed over a long period, the hair should be washed every few weeks to prevent irritation and discomfort and to maintain health. The shampoo may be given without any discomfort to the patient.

Articles Required: Two rubber sheets; two towels; two face flannels; one large jug of hot water; one small jug of soap solution; a wash basin; a large bucket.

Procedure.—Screen the bed and close the windows. Fold the quilt. Loosen the patient's nightgown at the neck and tuck it in. Arrange a towel round the shoulders, and over this place one of the rubber sheets, turning the towel over at the neck like a collar. Fasten both in front. Remove the pillows, if patient can be placed flat. Turn under the mattress at the top about three feet, the nape of the patient's neck being supported by this roll. Place the second rubber sheet over the wire mattress. The basin is now placed on the protected wire mattress under the patient's head. One face flannel is placed over the eyes, the other being used to rinse the hair. Thoroughly moisten the hair and scalp with soap solution, and hot water. Rub well, then rinse with hot water. Empty the basin into the bucket and rinse the hair again. Squeeze moisture out of the hair. Remove the basin and rubber sheets, fold the towel round the head like a turban. Replace the mattress and pillows, putting a dry towel over the top pillow and spread out the hair. A hot water bottle may be placed under the towel, temperature 130° F. Care is always necessary when using hot water bottles to avoid burning the patient.

Second Method.—Allow the patient to lie on her side towards the edge of the bed in a comfortable and convenient position. Leave one pillow under the head and arrange the patient's gown and upper bedding so that they will not get wet. Protect the pillow and under bed-clothes with a rubber sheet, arranging it in the form of a trough, so that the water will run into the bucket on the floor. The patient's head lies in this horse-shoe trough and the head is washed as before.

Infected Hair or Pediculosis:

Suspicious Signs.—Scratching of an itchy scalp. A rash about the neck. Boils about the neck and ears. Swollen glands in the neck, and abscesses.

Treatment.—First place a towel or cape over the shoulders. Thoroughly moisten the hair and scalp with a special lotion—*e.g.*, oil of sassafras, or kerosene and olive oil, equal parts. Cover with a piece of oil silk, and a triangular bandage, bound on like a dust cap. Leave for four to eight hours, then shampoo the head, and thoroughly comb with a fine comb. Cleanse the comb frequently in carbolic lotion 1—40, using a piece of cotton wool. This treatment kills the pediculi, but does not remove the nits. Dipping the comb in hot vinegar or a strong solution of baking soda unglues the eggs and allows them to be combed out. Always burn the eggs. The tooth comb should be used twice daily for about a week, and the treatment repeated if necessary. The nurse must wash her nails and hands after this procedure. Patients must each have their own combs and brushes.

CAUSES AND PREVENTION OF BEDSORES

Bedsores may occur if a patient is lying for a long time in bed and is unable to receive correct attention.

First the skin looks red and sore and feels tender; in a few days if it is not looked after it will break. Once the skin has broken there is the danger of infection and a very nasty sore resulting, which may take a long time to heal.

Some Patients Who Are Liable to Bedsores.—Old people whose circulation is poor, thin people whose skin is thin over bony prominences, those suffering from paralysis where the circulation is poor, incontinent patients, very ill people whose vitality is low and any patient who has to lie in the one position for any length of time.

Local Causes:

Pressure, either from the weight of the body on a hard bed or from the weight of the bed-clothes over a bony surface, or from pressure by splints.

Moisture, which may be from discharges from the body, or soiling of the bed linen with faeces or urine, or from perspiration.

Friction, through lying on wrinkles or crumbs, sitting too long on a hard bed pan, two skin surfaces rubbing together, or irritation of the skin over bony prominences such as the elbows, knees, shoulders and heels.

Prevention of Bedsores.—Routine local treatment should be carried out twice a day for all patients who are confined to bed. Wash the lower part of the back and hips, using soap on the wash cloth first, then soap the palm of the hand and rub the back vigorously with a circular movement; wash this off and dry well, paying particular attention to the fold

between the buttocks. Alcohol is then rubbed into the skin with the same circular movement; it helps to harden the skin and the vigorous rubbing brings the circulation into the part. Patients whose condition predisposes to bedsores must receive more frequent attention.

Other Pressure Points, such as the shoulder blades, elbows, knees, ankles and heels, should receive the same attention. Patients whose condition predisposes to bedsores must receive more frequent attention—*e.g.,* 2-hourly or 4-hourly.

Prevention of Pressure.—Some patients are nursed from the outset on air rings, which relieve the pressure over the buttocks. If any signs of redness appear over the elbows, heels or ankles, cotton wool rings may be made to relieve the pressure. Bed cradles can be utilised to take the weight of the bed-clothes off the knees and toes. Full-sized air or water beds are very useful in some conditions.

Changing the Position of the patient at regular intervals is permitted for some illnesses; it helps to relieve the pressure on certain parts, and prevents stagnation of blood in that area. Turning the patient on to one side for two hours, and supporting him with pillows, then turning him to the other side for two hours, then on to his back for two hours and repeating this at two-hourly intervals. If this cannot be done every two hours it should be done at least every four hours.

An Incontinent Patient should receive immediate attention whenever his bed becomes soiled. The patient must be kept scrupulously clean; after washing the skin thoroughly, it should be well dried and all traces of soiled linen removed. A waterproof ointment such as zinc and castor oil

may be supplied to protect the skin. Pads of absorbent material can be made use of to prevent the patient lying in a pool of moisture. Urinals may be arranged in position for male patients who are incontinent.

Treatment of a Bedsore.—This will be under the instructions of a doctor. Often elastoplast is ordered to cover a small *abrasion;* it is important not to stretch the elastoplast when applying it. For an *ulcer,* lint or gauze dipped in Friar's Balsam or cod-liver oil may be ordered and the ulcer dressed in an aseptic manner. The dressing is kept in position with strips of adhesive plaster. Ointment or other lotions may be used, but will be as the doctor instructs. As many ointments and oils stain linen, a separate set of draw-sheets may have to be kept. Pressure must be kept off the bedsore by all possible means.

CHAPTER IV.

INFECTION AND ITS PREVENTION

The prevention of infection in patients is the object of much of the nurse's work, and this brief outline will give more understanding and interests in the subject.

GERMS AND DISEASE

Germs: The microscope has revealed the existence of extremely small and simple forms of life, called bacteria, or germs. Many of them serve a useful purpose in the soil and human intestine, while others are capable of causing disease in the body. Germs are invisible to the naked eye; they multiply under favourable conditions by dividing into two, and as this process can take place in as short a time as 20 minutes, their increase to large and dangerous numbers is very rapid. While some kind can live for an indefinite period away from the human body, others require contact with the warmth and moisture of human tissues for their survival. Some are more dangerous than others. It is safe however, to class all together for purposes of this chapter.

The Sources of Infection are as Follows:—

(a) The patient who is known to be suffering from an infectious disease or infection in a wound.

(b) The patient or person whose signs and symptoms are so slight that the infection is not evident.

(c) The patient in the incubation stage of an infectious disease.

(d) The carrier who is a person who carries the infection in his body, but may show no signs of the disease.

Germs enter the body, and set up disease or infection according to the particular type of germ.

(a) ***Penetration:*** For example one kind, if it enters a wound or abrasion may cause a local abscess, or it may spread into the blood stream and cause a general blood infection.

(b) ***Inhalation:*** Others enter the mouth and settle in the throat causing local areas of infection, with poisons spreading from them in the blood stream to all parts of the body. Examples of this type are diphtheria, scarlet fever, colds, sore throat, tuberculosis, mumps, etc.

(c) ***Ingestion:*** Means that germs are swallowed with food, which happens in diseases like typhoid fever and dysentery.

Germs are given off from the infected individual by means of excretions or discharge:—

(a) From the nose and throat in diseases like diphtheria, tuberculosis, mumps, colds.

(b) From the stomach or intestines or urine in diseases like typhoid fever and dysentery.

(c) From inflamed mucous membranes such as in conjunctivitis, septic mouth.

(d) From the discharge from septic wounds, burns etc.

The spread of infection may be by the following means:—

(a) ***Contact. The skin,*** particularly of the fingers and hands of patients and staff is liable to contamination by contact with their own and other persons' infected secretions and discharges.

Clothes of nurses may become contaminated during ward duties and may carry infection. Handkerchiefs and the pockets are liable to be heavily contaminated.

Ward articles. Every article in the ward, unless it has been sterilized may have living bacteria upon it. China, thermometers, toys, bedpans etc. are examples.

Food and milk if left exposed to the air and dust are liable to become infected.

Insects: Flies and other insects may transfer infection, particularly gastrointestinal ones like dysentery, because of their habits ***of settling and feeding on foods and faecal matter.***

(b) ***Droplet borne:*** Minute droplets of saliva containing bacteria are projected from the nose for 3 to 6 feet through the air during talking, coughing or sneezing. These may directly infect a second person or they may fall on the ward articles and infect them. Smaller droplets may evaporate and remain suspended in the air and later may be inhaled.

(c) ***Dust-borne.*** Dust may be heavily infected. Dry sweeping, careless bedmaking, and dry dusting are the means of transferring dust to other articles in the ward or to be actually inhaled by patients or nurses.

Diseases which are caused by germs are termed ***infectious, communicable,*** or ***contagious,*** but these terms are synonymous for the purposes of this chapter.

IMMUNITY OR RESISTANCE

The human body has power of resisting the action of germs, by destroying them before they multiply. This resistance, or immunity is an interesting study.

(a) An attack of some diseases sets up a resistance to further attacks of a similar disease; this happens in mumps for example.

(b) A resistance can be artificially made, such as by injecting minute doses of various substances which stimulate the body tissues to manufacture counteracting materials. This is called immunization and is done for smallpox, diphtheria, typhoid fever, whooping cough and tetanus.

(c) A natural resistance is greatly assisted by attention to all the rules of health including correct diet, rest, exercise, fresh air, sunshine and happy surroundings.

CONTROL OF INFECTION

Although infection is so widespread and easily transferred, there are very simple and effective methods of controlling it, provided the nurse is interested and conscientious.

Destruction of Bacteria:

(a) ***Natural agencies: Bright sunshine*** destroys germs in periods varying from two to four hours. Articles such as pillows, blankets and mattresses should be well exposed on all areas. ***Ventilation*** dilutes the concentration of germs in the air.

TABLE OF SUITABLE CHEMICAL DISINFECTANTS

Used for	Disinfectant	Strength	Length of Time
Metal instruments	Lysol	Pure (must be well washed off with boiling water)	10 minutes
Linen (Always mix solution before putting in.)	Cyllin or Kerol, Restar, Chenol	1 in 80 (2 oz. to gallon)	4 hours
	Lysol or Carbolic	1 in 40 (4 oz. to gallon)	4 hours
	Formalin	1 in 20 (8 oz. to gallon)	4 hours
	Wyandotte Sterichlor	1 in 2000 ($3\frac{1}{2}$ heaped teaspoons to gallon)	2 hours

(b) ***Physical agencies:*** Heat either dry or moist for definite periods is a very sure means. Dry heating, *e.g.*, in an electric oven at 350° F. for one hour will destroy germs in cotton wool and gauze, or hypodermic needles, powder (in shallow layers) and other articles. High pressure steam is valuable for these materials and for enamel ware and instruments. These methods are employed in hospitals. Boiling water is a simple and effective method provided the articles are completely immersed in it. Five minutes is now definitely counted a sufficient length of time. Glass must be wrapped and placed in cold water and gradually brought to the boil, and then boiled 5 minutes. Articles prepared in this way and kept uncontaminated, are known as sterile. Thorough scrubbing with soap and water is the only way to remove germs from the surfaces of hands, furniture, floors, walls etc.

(c) ***Chemicals:*** A variety of disinfectants or antiseptics are in use and a list of those most commonly used are shown on the accompanying table. It is important that chemicals are used at the required ***strength*** and for correct ***length*** of ***time*** for them to destroy germs. The terms antiseptic and disinfectant are used for the same purpose when describing the chemicals which are used for this purpose. See "Table of Suitable Disinfectants on Page 42.

INFECTION
THE PREVENTION OR SPREAD OF

(a) IN EVERYDAY NURSING

Because there is always the possibility that some patients may have an infection which is not causing obvious signs, it is necessary to carry out all nursing procedures with the object of preventing the spread of infections from one patient to another, or on to the nurse, or from the nurse to patients. This is particularly important in infants and childrens' wards, but the same care is necessary in all wards.

The Nurses' hands and arms must be washed in soap and water after attending to any patient. Nails must be kept short and the cuticle intact; a soft nailbrush should be used several times a day. Important times for handwashing are:—after handling bedpans and urinals, after changing babies napkins; after attention to the patient's mouth; after performing a dressing or readjusting a bandage; after handling soiled linen; after handling any specimen; after any cleaning duties; before any attention to a baby particularly feeding; before handling patients' food and dishes and your own meals. Chapping should be prevented by thorough drying, and by the use of emolient cream. If cracks occur, smear the hands with cream or ointment and cover with old fabric gloves and leave on all night.

Ventilation: The windows of a sickroom should never be entirely closed except while the patient is uncovered. Draughts must be avoided and to prevent them, use a board of 8 to 12 inches high, fitted into the lower opening when the sash is raised. A fireplace provides a good ventilation,

but fresh air must enter. The best test for the freshness of air in a room is the degree of closeness or stuffiness present when anyone enters it.

Sweeping of floors must be carried out in such a way that dust is prevented from rising and yet is completely collected. Pull all furniture out from the walls and sweep and dust carefully before replacing. Brooms and mops may be dampened with water or oil; moist tea leaves or sawdust can be sprinkled on the floor and then swept up with the dust. Brush the collection into a shovel and wrap in newspaper for burning. A dry or oiled mop, or polisher is then used to remove the fine dust.

Dusting: Movements should be long and firm and not just flicking. Brooms, mops and dusters should be shaken into a rubbish tin, or well away from any chance of the dust being blown back into the house or ward. They must be washed, including handles, at least once weekly.

Sinks and baths are cleaned with warm water, sandsoap or other suitable abrasive. Kerosene helps to clean baths but it must be well washed off. The lavatory pan and seat must be well scrubbed, using a long handled brush for the pan.

Bed pans and urinals are rinsed and brushed clean in cold water. Patients' hand basins and mouth wash bowls are scoured after use. In hospitals these articles are boiled after use.

Sputum mugs require special care; after emptying carefully to avoid splashing, place the mug in a receptacle, cover with water to which washing soda has been added (2 tea-

spoons to 2 pints) and boil 5 minutes. All patients and nurses should cover their noses and mouths when coughing and sneezing.

Thermometers are disinfected by immersing two thirds of length in disinfectant of suitable strength, and left a sufficient length of time between patients. Individual thermometers are the ideal (see thermometer procedure).

Food utensils should be washed in hot soapy water, taking care to cleanse forks etc., thoroughly. In hospitals they are usually boiled. Dish cloths and mops should be boiled daily, and dish towels changed frequently. Persons suffering from colds should be careful to avoid infecting food or dishes with their hands or breath.

Soiled linen is placed in a bucket or on paper at the bedside and removed to the washhouse by keeping away from the overall. Linen, blankets and pillows must not be allowed to touch the floor. Children are not placed on each others beds.

(b) THE ISOLATION OF INFECTIOUS DISEASES

The measures outlined under (a) are of course necessary when a patient is known to have an infectious disease, but more particular care is also necessary.

The room selected should, if possible, be near a bathroom and should admit plenty of fresh air. Superfluous furniture should be removed and washed or placed in the sun for six hours to allow space for the nursing care and to avoid unnecessary collection of dust, etc. Carpets are removed.

Cleaning equipment should be kept in the sick room or in

a space reserved for it and it should not be used in other parts of the house.

Bedpans, urinals, washbasins and mouth bowls are kept for the exclusive use of the patient, or are boiled after use.

Feeding utensils could be kept separate for the use of the patient, together with separate washing up basin and towel, but it is preferable to cover them with water and boil for five minutes after use. Any food taken into the sick room or not consumed by the patient must be burned (after wrapping in paper) and not taken to the kitchen.

Soiled linen should be placed immediately at the bedside in a covered pail or linen bag and left in it until ready for laundering; or it may be placed from the container immediately in the washing copper and boiled for five minutes. If articles are stained they should first be soaked in disinfectant according to the table on page 42. Linen from typhoid fever or dysentery requires soaking in disinfectant in every case when removed from the bed.

Discharge from the nose and throat are received on old rags or paper handkerchiefs and placed in a paper bag—which is pinned at the side of the bed. These are then collected and burned twice daily. The patient must be instructed to cover his nose and mouth with a handkerchief when coughing or sneezing. Sputum is particularly dangerous and is dealt with as already described.

The Nurses' hands require care as already described, but more particular care is necessary after attention on the patient and after handling any equipment. One minute should be a minimum time for this washing. A table in the

room should have a washbasin, soap, towels and hand lotion. Before attending to the patient, half fill the bowl with hot water ready for use.

Gowns are used to protect the nurse's dress or overall. The gown is used only while nursing is being given, and to be efficient must be used with care. It should cover the dress and reach the elbows, the dress sleeves being tucked above the elbows before beginning the procedure. When it is kept near the patient it is folded with the contaminated side ***out,*** but when it is kept outside the room, it is hung contaminated side ***in.*** In putting on or removing the gown the greatest care must be exercised to keep the inside of the gown uncontaminated. Hand washing and gowning go together, and the following are details:—

To put the gown on. (Gown near patient)—With palms together open the gown at the back, touching nothing except the inside of the gown, and slip the gown on, allowing the arms to slide well through the sleeves. With the hands still uncontaminated tie the strings at the back of the neck. Bring the back edges together and fold over, and tie the strings at the back. After attending to the patient, untie waist strings, wash the hands for one minute and untie the tapes at neck. Still with uncontaminated hands, place the fingers of the right hand inside the left hand sleeve, pull the sleeve over the left hand; with the left hand thus protected pull the right sleeve over the right hand, then place the shoulders and back seams together. The gown is then hung carefully by the shoulders with back edges together. The hands are again washed for one minute. The scrubbing must be timed by a clock or sand

glass until habit is established. To use the gown, which is to be hung inside out, the same method applies, except that in removing the gown, one side is folded over to make back edges meet, and the gown is hung inside out. In a private home, use an old smock or nightdress, opened down the full length of the back. Once a day or at least every two days the gown should be placed with other linen waiting for laundry.

The bathroom should be kept free of infection. Keep a supply of paper squares for the purpose of turning on taps and opening doors, holding jugs, etc.

The Nurses' hair should be kept well covered.

Protection of the Physician. On entering the house a clean area must be provided for the physician's hat and coat. Before entering the sick room he should be given a clean uncontaminated gown to protect his clothing. Clean towels with water and soap should be provided for his hands.

Terminal Disinfection. After the isolation period is over the patient should be given a hot bath. If he is well enough he should be taken to the bathroom, divested of all infected clothing and put into the bath. While he is in the bath the nurse should return the infected clothing to the sick room, remove her overall, hang it up and wash her hands. She then collects fresh clothing and towels for the patient and takes them into the bathroom. In the bathing of the patient, plenty of soap and hot water are sufficient, no additional disinfectant is required; fresh flannels and a new tooth brush should be provided. The hair should be washed at the same time. After drying with clean warm towels the patient puts on a clean gown, then a clean dressing gown,

or he is wrapped in a clean blanket and taken to another room where he is put into an entirely clean bed. Nothing that the patient used in the sick room must be taken out of it, and he must on no account be allowed to return to it until it has been thoroughly cleansed and aired.

Disinfection of Sick Room. All sheets, towels, clothing and bedding should be washed and dried in the sun if possible. Linen from typhoid patients requires soaking in disinfectant as previously instructed before washing. Woodwork, bed, tables, chairs, toilet articles and floor should be washed with soap and water. Bed pans and other toilet articles and enamelware should be boiled in copper for 5 minutes. Mattress and pillows are exposed to the sun for six hours. Blankets should be well sunned and washed. Books and toys are burnt. The walls are swept. The floor is washed last. All drawers and cupboards should be washed and dried and left open to air. The windows and doors should be opened wide and left open for twelve hours to air the room thoroughly. Disinfecting the room with formalin or sulphur is not now considered necessary, provided the previous method of airing and washing the room is efficiently carried out.

(c) **SURGICAL WOUNDS**

The prevention of infection of wounds, however small they are, is carried out on the reverse principle of preventing spread of infection ***from*** a patient. In surgical work, we prevent infection ***reaching*** the patient by having everything which touches the wound sterile or aseptic.

The requirements for dressing a simple wound are: a tray or large enamel plate; a bowl or cup (without handle) or

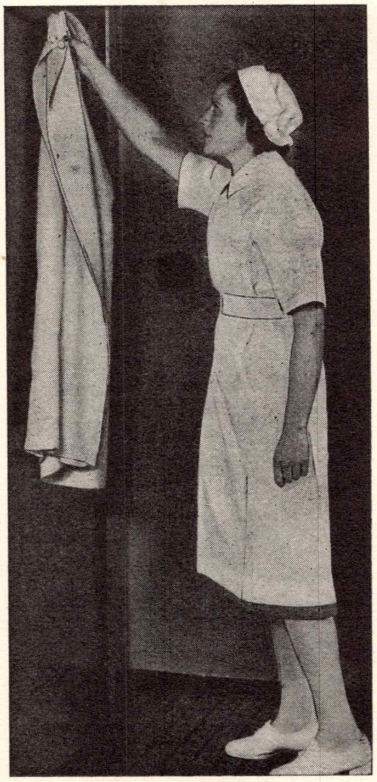
jar to hold cotton wool, gauze and pad of cotton wool to cover wound; a bowl or cup to hold lotion for cleansing the wound (sterile water, saline or boracic) a kidney bowl or small pie dish for dressing, forceps and scissors if required; several layers of paper, or a paper bag to receive soiled dressings; a sterile linen cover if procurable, to cover the tray. All of the above equipment must be sterile.

In the procedure which follows, the main object is to allow only sterile articles to touch the wound or the surrounding area. The tray is set and taken to the bedside. The patient is screened if in a ward. The bandage is removed and re-rolled and placed on a piece of paper on a tray. The nurse cleanses her hands by washing thoroughly in hot water with soap and dries them on a clean towel. With a pair of forceps the nurse gently removes the soiled dressing and places it in the kidney tray on the piece of paper. With a second pair of forceps (if procurable) she swabs the wound and the surrounding area with sterile swabs moistened with the lotion, swabbing always away from the wound and finishing with a dry swab. Two layers of gauze are then applied and are covered with sufficient wool to prevent discharge from soaking through. The bandage is then firmly and gently applied. The tray is removed and the soiled dressings rolled in the paper or bag and burnt. The bowls and instruments are boiled for 5 minutes. The nurse then washes her hands thoroughly. The nurse and patient should avoid speaking during the dressing as droplets of mucous are liable to be expelled and infect the wound. The patient may appreciate a drink after the completion of a dressing.

Surgical Fomentation

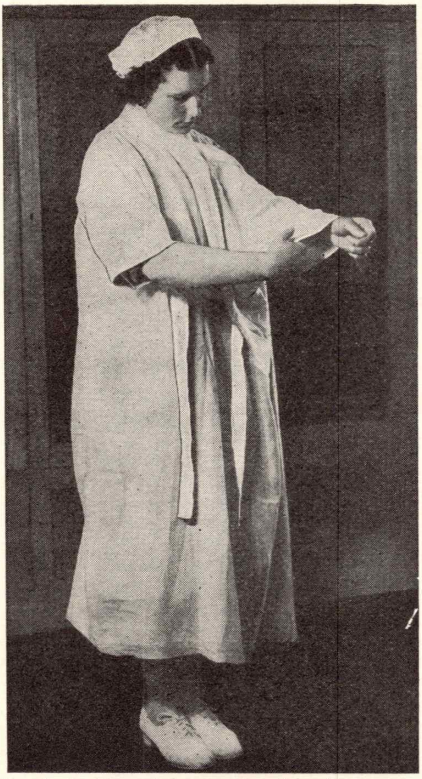
There are several methods of carrying out this procedure; one is as follows: Set a tray as for a surgical dressing. In addition, take a piece of lint (doubled) cut to the required size; a piece of protective tissue slightly larger; cotton wool to cover the whole. The lint is placed in the centre of a small towel or foment wringer and is immersed in a saucepan of boiling water, the ends of the wringer being brought out on top of the lid. Boil for 5 minutes while the wound is dressed in the ordinary way. Cover the wound with a double thickness of sterile gauze; wring the foment as dry as possible, giving one shake; place it over the wound, cover with protective tissue and then with cotton wool. (The protective should be sterile.)

If possible a nurse should wear a gauze mask over mouth and nose whilst carrying out any procedure in this chapter.

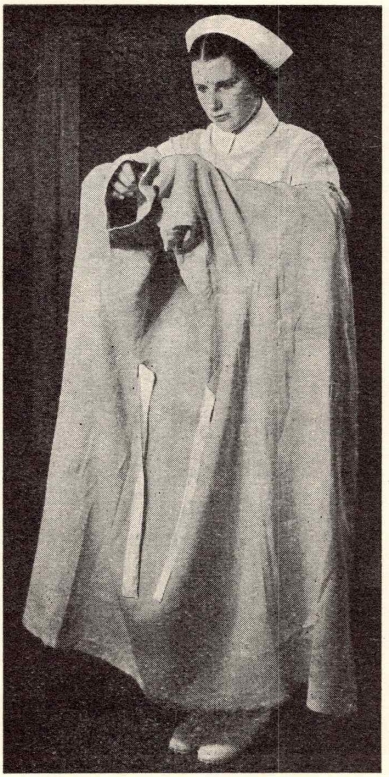


The gown hanging contaminated side inside; the nurse removing gown from the hook.

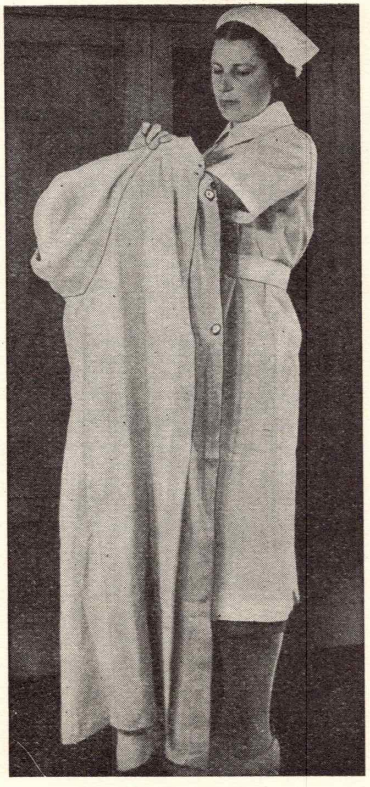
The nurse getting into the gown and preventing her hands from becoming contaminated by the outside until it is fastened.
(In making the gown the waste ties should be sewn on a line with the under-arm.)



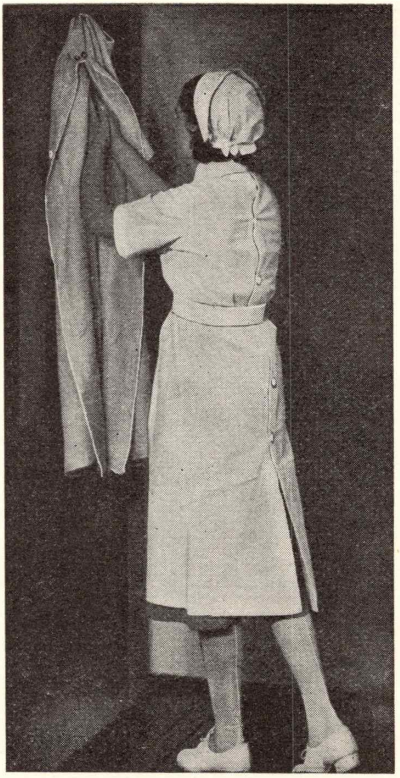
After scrubbing the hands and arms and unfastening the neck and waist, the fingers of right hand are placed inside left sleeve, which is pulled over the left hand.
(In all movements in putting on and removal of gown the object is to keep the inside of the gown uncontaminated.)



With left hand protected the right sleeve is caught on the outside and pulled over hand.



The right forearm and hand have turned the gown inside out, and the nurse is seen completing the movement by placing the back seams even. The gown is then hung as in next illustration. This is the method of folding after use if gown is hung inside out.



The gown hanging contaminated side inside; the nurse replacing gown on the hook.

CHAPTER V.

SIGNS OF SICKNESS

THE TEMPERATURE

Temperature of the Body.—In health, the normal temperature of the body is about 98.4° F., though in many people it may be habitually just below this, and no anxiety need be felt if a thermometer only registers a temperature of 97° F. Body temperature also varies at different times of the day, reaching its highest point at about 6 p.m., and its lowest in the early morning between 5 a.m. and 6 a.m. The temperature in illness is an important sign.

The Clinical Thermometer.—The temperature of the body is ascertained by means of a clinical thermometer.

Fig. 1—Clinical Thermometer.

This consists of a glass tube, at one end of which is a bulb containing mercury (Fig. 1). Up the centre of the thermometer runs a tiny hollow tube, and as the mercury in the bulb becomes heated and consequently expands, it rises up into this tiny tube, and can be seen as a thin silver thread running up the centre of the thermometer. On the thermometer degrees of temperature, ranging from 95° F. to

110° F. or over, are marked by means of black lines, and figures are written against the line, so that there may be no difficulty in reading the level to which the column of mercury has risen. Some thermometers are fitted with a magnifier which may be easily found by twisting the thermometer round in the fingers until the mercury column is clearly shown as a broad silver line. This simplifies the reading. The space between each degree of temperature is divided into five smaller spaces, each representing two points. That is to say, there are ten points between each degree of temperature and a temperature between 99° and 100° F. may be more accurately read as 99.4° F. or 99.6° F., according to the number of divisions which lie between the top of the mercury column and the line marked 99° F. The thermometer is usually marked, in addition, with the time which that particular instrument takes to register temperature. Some register in half a minute, some take as long as three minutes, but it is always wise to leave the thermometer in the mouth for two minutes. However long the thermometer may be left, it will not register a temperature higher than that of the patient, but if left too short a time, an incorrect temperature, lower than the real temperature of the patient, may be recorded.

The clinical thermometer is self-registering; that is to say, the mercury column will not fall when the thermometer is removed from the patient, but will remain at its highest point so that it may be read and a written record made before the mercury is shaken down to its former level.

To Shake Down the Thermometer.—The thermometer should be lightly but firmly grasped between the first finger and thumb of the right hand, the bulb pointing downwards

and the thermometer held slightly in front so that there may be no fear of jerking it against any article of furniture and so breaking it. One or two sharp flicks of the wrist are then made in a downward direction which cause the mercury column to fall in the tube. Practice of this procedure should be made with a glass rod or a pencil. It should be shaken down to 95° F. before the thermometer is put away, but it is wise always to ensure that this has been done before using the thermometer again. The mercury will not fall by itself, and if it is left registering a temperature of 99° F. and given to a patient with a normal temperature, that patient's temperature will be recorded inaccurately as 99° F.

To Record the Temperature.—Special charts are in common use for the recording of the temperature during illness. These consist of squared paper, the lines across denoting the degrees of temperature and those down denoting the time at which the temperature is taken. The normal temperature, 98.4° F., is marked with a deep horizontal line so that deviations from the normal may be easily seen. In cases of severe illness, the temperature may need to be recorded every four hours, and for this, the hours of ten, two and six are usually chosen. In ordinary cases of sickness, the temperature is recorded twice a day, at times as near 6 a.m. and 6 p.m. as possible, when the temperature of the body is generally at its lowest and highest respectively. The spaces between the vertical lines are therefore usually marked "morning" and "evening," two spaces making up one day; but if the temperature is to be charted every four hours, the space for the morning will need to be divided into three—to represent the hours of 2 a.m., 6 a.m., and 10 a.m.; and the evening

space to be similarly divided to represent the hours of 2 p.m., 6 p.m., and 10 p.m. Space on some charts will not allow this subdivision and special charts will be used for the purpose.

The thermometer is removed from the patient, read and charted and the charted temperature checked by the thermometer before the mercury is shaken down to the level at which it is kept—approximately 95° F.

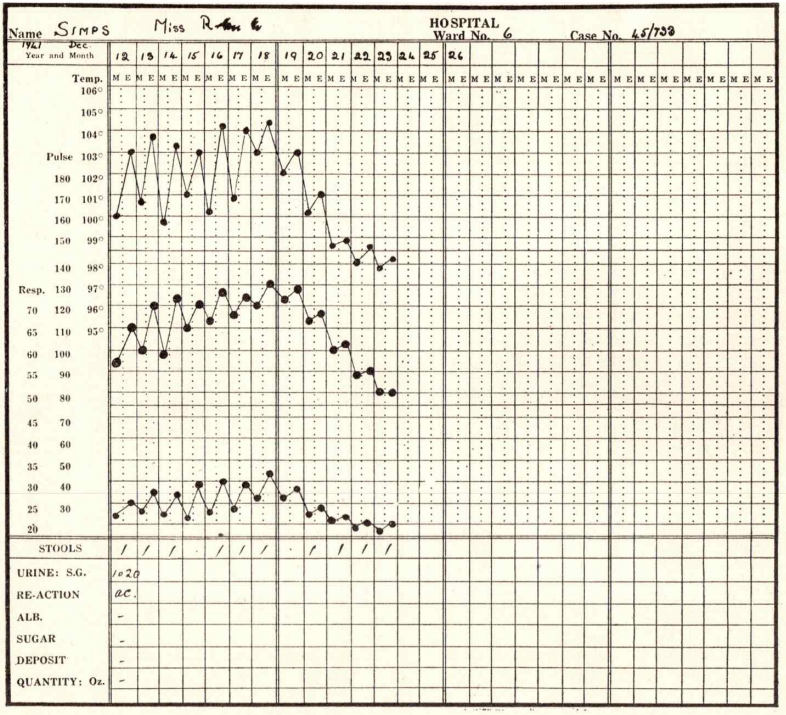
The temperature is charted by means of a black dot on the chart. The space denoting the time is found and, where the horizontal line representing the temperature crosses this, a dot is made and connected with the dot representing the previous temperature by a straight line.

Temperature in Sickness.—In most cases of sickness there is a rise of body temperature. *Pyrexia* is the term used to denote a fever or febrile temperature ranging between 101 and 105° F. If the body temperature is raised above this, it is usually spoken of as *hyper-pyrexia.*

Ranges of temperature

A subnormal temperature	95- 98° F.
A normal temperature	98- 98.8°F.
A febrile temperature	99-100° F.
Pyrexia	101-105° F.
Hyper-pyrexia	105-110° F.

Body temperature of 110° F. is seldom met with, though a rise of temperature to 108° F. may be registered shortly before death in some cases. A subnormal temperature may be quite as alarming as a high one and may indicate a serious condition of collapse, so that a temperature below 97° F. should be noted as carefully as one above 99° F.



Temperature Chart.

Fall of Temperature.—When a patient is recovering from an illness, the temperature usually falls gradually to normal level, a process known as "falling by lysis." In certain illnesses, however, of which a typical example is pneumonia, the temperature may fall suddenly to normal, and this is termed "crisis."

TO TAKE A TEMPERATURE

(Use Health Department Method)

Main Principles:

(a) The taking of an accurate temperature.
(b) The prevention of the spread of recognised or unrecognised infections.
(c) The prevention of breakage of thermometers.
(d) Neat and accurate recording.

TAKING TEMPERATURE BY MOUTH

Requirements:

Tray containing four glass receptacles.

1. Will contain a suitable antiseptic such as:
   Dettol 1 in 40 solution (4 drams to 1 pint of water.)
   Cyllin 1 in 160 solution.
   Sufficient antiseptic to cover at least three-quarters thermometer and a small swab of wool should be placed in the glass to protect the end of the thermometer.
2. Will contain clean cold water for rinsing the thermometers, also to contain a wool swab.
3. Will contain clean wipes made of old linen, cotton wool or paper.
4. Will be a container to receive the soiled swabs.

Additional Requirements:

Patients chart, if in use, or a piece of paper and pencil. Watch with a second hand.

Procedure:

1. Wash hands.
2. Place the thermometer tray on the table by the patient and explain the procedure.
3. Remove the thermometer from container, rinse in water and wipe.
4. Read and shake to below 95° F.
5. Instruct patient to open his mouth, place thermometer under his tongue at an oblique angle.
6. Warn him to keep his lips closed, to avoid talking and not to bite the thermometer. In some cases it may be necessary to hold it in place. *It must be left in place for two minutes* to allow it to register sufficiently.
7. Take pulse and respiration and chart immediately.
8. Remove the thermometer, wipe firmly towards bulb, discard the wipe into the soiled container.
9. Read, replace thermometer in the jar of antiseptic.
10. Wash hands.

Precautions:

1. Do not take the temperature immediately after a hot or cold drink has been given, following exercise, a hot bath, or smoking.
2. If doubtful of accuracy of the reading, take temperature again with another thermometer.
3. Do not leave the room while a thermometer is in the patients mouth.
4. Do not leave the bedside of a child under 6 years.

5. Avoid touching the part of the thermometer which is placed in the patients mouth.

The most usual and convenient place for taking the temperature is in the mouth.

Exceptions to this rule are:

In the case of—

Young children, unconscious or delirious patients, mental patients.

After operation on mouth or nose.

Where there is any disease of the mouth.

TAKING THE TEMPERATURE IN THE AXILLA

The requirements are the same as for the mouth and the technique is similar except for the following:

The skin is dried with the patients towel; the bulb of the thermometer is placed in the axilla, with the skin surfaces in contact with bulb and no fold of clothing intervening; the arm is then flexed across the chest to keep the thermometer in place. The thermometer is left in place for three minutes.

TAKING TEMPERATURE IN GROIN

Same method as for axilla the thermometer is placed in the groin, stem pointing towards the hip, which is flexed on to the abdomen; the thermometer is held in place.

TAKING THE TEMPERATURE IN RECTUM

This method should be used only for babies and young children and must not be used unless ordered by a doctor.

Requirements:

Tray containing:

1. Individual thermometers in labelled individual containers of antiseptic.

2. Jar of lubricant jelly.
3. Container to receive soiled swabs.
4. Jar of rinsing water.

Procedure:

1. Wash hands before commencing.
2. Loosen the crib blankets and fold back. Undo the napkin.
3. Remove patients thermometer from container, rinse and wipe, shake to below 95° F.
4. Lubricate the bulb with a thermometer wipe. *Never insert thermometer into the lubricant.*
5. Turn the baby on its left side with its knees drawn up and control carefully. The child may alternatively be placed in a dorsal position with the thighs flexed.
6. Insert the thermometer into the rectum gently for 1 inch, replacing the bed covers.
7. Hold in position for 1 minute.
8. Remove the thermometer, wipe carefully from stem towards the bulb.
9. Discard the soiled swab into the container provided.
10. Read and replace thermometer in its antiseptic.
11. Replace the napkin, change if necessary, and tuck baby down comfortably.
12. Remove the tray, wash the hands.
13. Record the temperature.

Precautions:

Individual thermometers must be used.

Never have rectal thermometers on same tray as oral thermometers.

The nurse must always hold the thermometer in place.

Never use this method in cases of inflamation or disease of the rectum.

Hands must be washed carefully.

CARE OF THERMOMETER TRAY

The tray is left tidy after use and its contents are cleaned and replenished at frequent intervals. Swabs and soiled wipes are wrapped in paper and discarded. When necessary boil containers for 5 minutes after wrapping in old linen and placed in cold or warm water.

RESETTING OF TRAY

Remove jars from bowl in which they have been boiled and allow to cool. Place swabs in bottom of two jars, add the antiseptic in one and the clean water in the other and replace on the tray. Replace thermometers and fill one jar with clean wipes.

ALTERNATIVE TRAY FOR TAKING WARD TEMPERATURES

Where a stand and test tubes are not available the following can be used:

Four small jars of antiseptic, deep enough to immerse the thermometers for threequarters of their length with small pad of wool on the bottom of each. The jars to be labelled clearly in numbers 1 to 4 and each to hold three thermometers.

Jar 1 to be used for first three patients technique as previously outlined and the thermometers to be replaced in the jars.

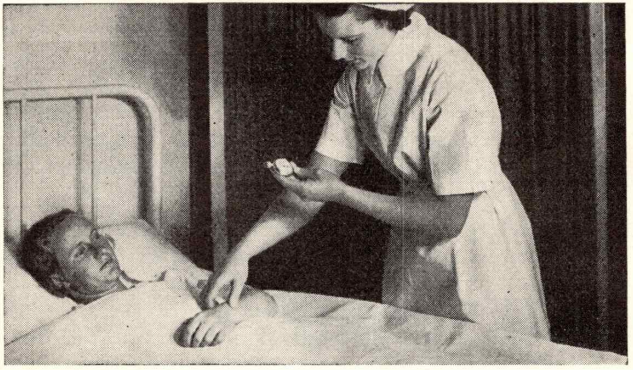
Jar 2 for next three patients and then jars 3 and 4. By the time jar 1 is again used the thermometers have had sufficient time for thorough disinfection.

Rigor.—Many diseases are ushered in by what is known as a rigor. This consists of a rapid and sudden rise of temperature, accompanied by severe shivering during which the patient complains of feeling intensely cold. This stage is followed by one in which the patient feels burning hot and the maximum temperature is reached. The third stage follows and is accompanied by profuse sweating, during which the temperature gradually falls.

Treatment of Rigors.—Extra blankets, hot bottles and a hot drink should be given during the shivering stage, and the temperature taken and recorded. When the hot stage is reached the added bed clothing may be removed, and when sweating occurs the patient should be rubbed down with hot towels and put into a dry nightgown. If sweating is very profuse the sheets may require to be changed. Great care must be taken at this stage to avoid chill. The temperature should be taken and recorded again when the rigor has passed. N.B.—A doctor must be called if a patient has any severe shivering fit.

THE PULSE

The pulse is the wave of expansion felt in the elastic arteries when the heart pumps blood into these vessels. The pulse can be felt wherever a superficial artery runs over a bone, e.g., at the wrist below the thumb, where the radial artery runs over the radius, and on the face, at a point in front of and in line with the junction of the top of the ear with the face. It is felt by placing the index and second fingers over it and counting the number of beats to a minute. The patient should be seated or lying down. There are many variations of the pulse rate, but these can



Taking the pulse and respiration rates: note the patient's arm resting on her chest.

be learned only after much experience and understanding of the particular illnesses. The average rate of the pulse rate in an adult ranges between 72 and 80, and is increased during exercise or as the result of emotion; an alteration in the rate of pulse, either increased or decreased also occurs in some diseases.

THE RESPIRATION

The normal adult rate is between 15 and 20 per minute, but this will be increased during exercise or as the result of emotion. In infancy and childhood the rate is faster. The rate should be counted without the patient's knowledge, as control of the chest movements may be voluntary for a period. It is necessary to have patient at rest to observe the rise and fall of the chest while still keeping the fingers on the pulse. In slight illness the count may be made for half a minute and doubled, otherwise the full minute should be

counted. Regularity, depth and character of respirations are important in certain illnesses, but a knowledge of these can be gained only after much experience.

EXCRETA

URINE

By excreta we mean that which is excreted from the body. Urine and bowel motions (or stools) are classed under this heading. Micturition is the term used to denote the passage of urine. The doctor may be assisted in his diagnosis and his judgment of progress of illness by a knowledge of certain facts about the urine.

Quantity.—The amount passed in 24 hours is estimated by the nurse measuring all urine passed and noting the time and quantity on a special list.

A Specimen of urine can be tested to determine abnormal constituents. For this purpose, see that the bed pan is thoroughly cleansed and scalded; take it to the patient and explain what is required. When used, pour a specimen of not less than 4 ounces into a scalded jug, and thence into a scalded bottle or specimen jar, and label it with the date and the patient's name.

BOWEL MOTIONS

Defaecation is the term used to denote the passage of faeces, or the excretion of the bowels. This discharge should always be observed as it is frequently an important sign. Note the number of movements or motions during each 24 hours, and whether they are unduly hard or watery. Any motion which appears unusual should be saved for the doctor's inspection. It should have any paper removed,

and be kept covered in a well-ventilated lavatory or cupboard (if in hospital). (See note under "Medicines.")

For convenience Sputum and Vomit are included under this heading but signify abnormal conditions.

SPUTUM

The amount and appearance of sputum often assists the doctor. If the doctor desires a specimen of sputum, obtain it in the early morning. Take a small wide mouthed corked bottle, which has been boiled, to the patient, tell him that a specimen is required, and that he is to expectorate the secretion that comes up from his lungs without moving it about in his mouth, or collecting a lot of saliva. It is important that saliva should not form the bulk of the specimen.

The patient should take care not to soil the outside or the edges of the specimen bottle, which should be previously labelled so that the nurse need not handle it after the specimen has been obtained. Sputum in all cases contains germs and the nurse must be very careful to wash her hands thoroughly after handling sputum mugs and these specimens.

VOMIT

The amount, colour and general appearance of any vomit should be noted. If the appearance is unusual, save it for the doctor's inspection.

Precautions:

1. Avoid contamination by keeping jars suitably covered.
2. Outside of jar should not be contaminated with contents.
3. Thorough washing of hands after dealing with specimens.

CHAPTER VI.

DIET

Diet in Health.—If an engine is to withstand hard wear and carry on efficient work, it must be constructed of the very best materials, and be given the best quality of fuel. The human body can be likened to the engine in these respects, and we often fail to realise what an intricate piece of mechanism it is. The food taken is necessary for the building-up, the repair, and the working of the body, and ill-health results if this food is not of the correct type.

Much has been discovered in recent years regarding the importance of food in relation to the prevention of sickness, but space will not allow of a full discussion here. The following is an outline of what is now agreed as providing the necessary constituents of the diet of a normal person.

MILK: $1\frac{3}{4}$ pints children, 1-$1\frac{1}{2}$ pints adults. $1\frac{3}{4}$-2 pints pregnant and nursing women.

CHEESE: $\frac{1}{2}$-1 oz. daily.

EGGS: 3-5 a week whenever possible, with extra cheese and dried legumes as substitutes.

MEAT: At least one good serving a day, including liver and fish once a week.

VEGETABLES: A liberal serving of potato. A green vegetable, cauliflower or swede and one other. Some raw vegetable as often as possible.

FRUIT: Some cooked plus one serving of raw fruit. At least one fruit should be a rich source of vitamin C.

BUTTER: Full ration—6 oz. per week.

CEREALS INCLUDING BREAD: At least half the day's consumption as a whole grain product.

IODISED SALT: Constant use on tables and in cooking.

COD LIVER OIL OR SUBSTITUTE: 1 teaspoon for all pre-school children, in winter and spring months. 1 teaspoon for the pregnant and nursing women at all seasons.

ADDITIONAL FOODS: To satisfy appetite.

Diet in Sickness.—The above diet with other essential hygienic requirements will ensure health. Correct diet is equally essential during sickness as it assists in fighting infection and restoring diseased tissue. The foods already mentioned should form the basis of the diet in sickness, but there are some conditions in which the giving of special foods is necessary for the treatment—indeed in which food may be the most important single feature of the treatment. The doctor will order what special diet the patient is to have, and the nurse's duty is to be conscientious in giving the correct foods. What must be realised however, is that a great change in the approach to feeding the sick has developed through the years in line with the changed methods of medical treatment. Whereas in days gone by medical treatment involved the bleeding of patients by leeches and other means, now we find a steadily increasing use of blood transfusions, and an ever growing demand for blood donors to contribute to the large supply of blood required for this transfusion service.

There has been a similar swing of the pendulum in connection with the dietary treatment of the sick. Even with

the patient on a fluid diet, the aim throughout is to hasten recovery by supplying the body with fluids containing the highest possible nutritional value. The low calorie, low protein milk beverages such as whey and wine whey for example, are now replaced by high calorie high protein milk beverages made from liquid milk fortified with dried milk powder. In the same way the barley water of days gone by, which was in effect a quantity of water flavoured with a trace of lemon juice and containing a small amount of starch, is now replaced by fruit drinks containing a large quantity of fresh fruit juice well fortified with glucose and diluted with a minimum of water. Albumen water, a clear fluid containing protein is no longer recommended, because of the presence of an antivitamin in raw egg albumen. In place of this a concentrated form of chemically prepared protein is added to fruit drinks or used in soups.

For ordinary cases of illness in hospitals the diets are usually divided into four classes:

(1) LIQUID DIET: Foods in fluid form such as milk in different forms (milk, tea, cocoa, ovaltine, milk soups, etc.), egg flip, fruit juices, gruels, soups and broths. The food is usually given in quantities of about 6 ounces every 2 or 3 hours. Beef tea, broths and some soups are merely stimulants and are not foods as was at one time believed; they are useful to stimulate the appetite for other foods. Water in which vegetables have been cooked contains valuable minerals and can be used as the basis for appetising soups.

(2) SOFT DIET: Fluids as above in addition to softly cooked eggs, milk-toast, well cooked cereals, custards,

junkets, Spanish cream, jellies, ice cream, bread and butter etc.

(3) LIGHT DIET: Fluid and soft diet and in addition fruits, freshly cooked vegetables, potatoes, fish, chicken, and other tender meats.

(4) FULL DIET: Any food desired except those especially indigestible.

Serving Food.—Though the type of food given is most important, the method of cooking and serving affects very considerably the value of the food to the patient; this aspect is essentially a part of nursing care.

(1) The appetite of ill persons has to be tempted and food must be given with the utmost care. Pleasant surroundings, and attractively served dishes are conducive to appetite as well as to digestion. Trays, dishes and tray cloths must be absolutely clean and as attractive as possible. Use the best and prettiest china in the house; chipped and cracked articles must never be used. Glass and cutlery should be clean and shining. A flower on the tray adds to the attractiveness. Food must not be spilled on the edges of plates.

(2) Before the tray is brought to the bedside, wipe or wash the patient's face and hands and adjust the pillows to give support if the patient can sit up. A bed table is of great convenience and can be arranged by placing a board across the bed and resting the ends upon the tops of two chairs. A box with the sides and bottom taken away also makes a useful table.

(3) Serve hot foods hot, and cold foods cold. Dishes for hot foods should be well heated beforehand; cups for hot liquid such as tea should be heated. A hot dish may be kept warm by placing it over a bowl of hot water, and by

inverting another hot plate upon it while carrying it to the patient. The tap should be allowed to run for a minute or two before using water from it for a cold drink. Drinks become warm if allowed to stand about on the bedside table.

(4) Serve daintily and in small amounts, as overloaded plates may take away the appetite. Only the one course should be served at a time.

(5) As much as possible allow for patient's taste, but do not consult the patient before preparing the food.

(6) The room should be in order and well ventilated.

(7) Trays should be removed immediately after the meal.

(8) Helpless or weak patients will require assistance to eat and to drink. Place the tray on the table or chair beside the bed, and spread the table napkin under the patient's chin. Feed the patient slowly, and do not allow him to feel that you are anxious for him to finish quickly. The glass from which the patient drinks should not be more than half full. Place one hand under the pillow and raise this and the patient's head together slightly, and hold the glass to the lips with the other hand. Sometimes liquids may be given through a straw or a bent glass tube or spouted feeder. (This spout requires frequent cleansing.) See that each mouthful is swallowed before another is given.

(9) The nurse must herself be scrupulously clean in the preparation and serving of food. She must wash her hands before preparing and before serving food.

(10) The transfer of infection by means of crockery and cutlery is now being realised and in many hospitals all the articles used by patients and by staff are sterilised after each use. When influenza, colds and sore throats are prevalent the carrying out of such a scheme will reduce the number

of infections. When facilities are not adequate for the sterilization of all the dishes, those of patients suffering from the infection can be boiled in a saucepan. Great care is necessary to prevent chipping and cracking of crockery during this process.

Abundance of scalding, soapy water and a good dish mop does a great deal to remove infection from dishes. Tea towels should be clean for each meal. Dish cloths and dish mops should be thoroughly rinsed after use, shaken, and hung in the air (and sunshine, if possible) to dry. They should be boiled frequently.

(11) Persons suffering from colds should be careful not to infect food or dishes by their hands or breath.

MILK

Milk has been called the perfect food because it contains the constituents necessary to life—*i.e.,* proteins, carbohydrates, fat, mineral salts and vitamins. It is a perfect food only for the young of the animal producing the milk. Milk alone would not provide a perfect diet for an adult as too large a quantity would be necessary; it is also deficient in iron salts and in roughage. It is, however, an important adjunct to the diet of an adult, as it provides first-class protein and is one of the most important protective foods.

Contamination of Milk.—Milk as secreted in the healthy cow's udder is a sterile fluid, but it is a good medium for the growth of bacteria. When these gain access they multiply very rapidly, so that by the time milk reaches the consumer it may contain millions of bacteria. Bacteria may be added to the milk as follows:

(a) At the time of milking, by the milker's hands or droplets by dirt from the cow or cowshed, from dirty utensils, or utensils washed in contaminated water, by dust and flies.

(b) In a shop, by dirty utensils, dust and flies.

(c) In the consumer's home, if proper precautions are not taken in observing the following rules:

(1) Milk should be received into scrupulously clean and covered vessels, or kept in the sterile bottles in which it is delivered. All utensils for milk should first be washed in cold water, then in water containing soap or soda, at or near boiling point. If dried. a special clean cloth should be kept for that purpose only.

(2) Milk should be kept in a clean cool place away from any strong smelling food or vegetables. It must *never* be left in the sick-room or ward.

(3) It should always be kept covered.

(4) New milk should not be mixed with stale.

Milk and Disease.

Tuberculosis.—Infants and young children are liable to acquire tuberculosis from the milk of a cow suffering from bovine tuberculosis, especially tuberculosis of the udder.

Infective Enteritis or "Summer Diarrhoea" may be conveyed by infected milk, the contamination probably occurring in the home of the consumer, due to flies dropping in the milk, or walking on the spout of the jug.

Scarlet Fever and Diphtheria.—Milk has been found to be a culture medium for the bacteria of these diseases.

Water-borne diseases such as **Typhoid, Dysentery** and **Cholera** may also be conveyed by means of infected milk.

Undulant Fever (Malta Fever).—Cows are frequently affected by the *Brucella Abortus,* the organism causing contagious abortion in cows. This same organism can cause undulant fever in man.

These germs are destroyed by pasteurizing, boiling or scalding milk.

To Scald Milk.—The jug containing the milk should be placed in a saucepan of cold water which is brought to the boil and allowed to continue boiling around the milk for thirty minutes. The milk is then rapidly cooled by standing the jug in a basin of cold water in the sink and allowing cold water from the tap to trickle down the side of the jug. Care must be taken, however, that no water gets into the milk.

SOME SIMPLE INVALID RECIPES

This book cannot attempt to give the various methods of cooking all the foodstuffs which an invalid may require and which the home nurse should be able to cook and serve appetisingly. A reliable cookery book should be studied as occasion arises.

Junket.—Heat half a pint of milk to a temperature of 100° F. Stir into this a teaspoonful of sugar and pour into a glass dish. Add one teaspoonful of rennet and stand in a warm place until set. Nutmeg, if allowed, may be grated over the top, or coffee added to flavour it.

High protein milk drink.—Use 2 ozs. dried skim milk powder per pint of liquid milk. Mix the powder smooth with a little cold milk. Heat the remainder of milk just to boiling point, pour into cold mixture, beat well, cover and cool quickly. This can be served as a cold or iced milk

drink, or flavoured with coffee, ovaltine, or cocoa or served on stewed fruit, porridge and puddings. The flavour is very little different from that of plain milk.

Benger's Food.—Mix one tablespoonful of Benger's Food to a smooth paste with 4 tablespoonfuls of cold water. Pour on to this, slowly, ½ pint of boiling milk—preferably just off the boil—stirring all the time. Set the food away from the heat for 15 minutes to digest. At the end of this time, pour it into a clean saucepan and bring it quickly to the boil, stirring continuously. Cool quickly. When sufficiently cool it is ready for use.

Bread and Milk.—Remove the crust from a round of bread, cut into dice, put into a bowl, and pour on to it half a pint of boiling milk. Sugar or salt may be added to taste.

Custard.—Beat up two eggs with a little sugar and add a pint of milk. Strain into a buttered dish, stand the dish in a dripping tin containing a small quantity of water, and bake slowly in the oven until set or slightly brown. Vanilla flavouring may be added.

Apple pectin treatment for diarrhoea.—Use if possible, Duna's favourite, Cox's Orange, or Sturmer apples. Extract the pectin by cooking the apple, but do not prolong cooking or the pectin will be destroyed. Slice 6-8 apples (cores and peel included), barely cover with water and cook gently for 15 minutes. Strain, and give the patient the liquid to drink preferably without sugar and preferably all at once. Squeeze the pulp through a sieve and give the puree shortly following the drink.

Barley Water.—Wash two tablespoons of pearl barley, cover with one pint of water, add the peeled rind of half a lemon, bring to the boil and boil for half an hour. Strain,

make up to one pint with the boiled water, add the juice of two lemons and 1-2 ozs. of sugar. Cover and cool quickly. Serve cold.

Lemonade.—Put the thinly peeled rind of two lemons into a jug with two to three ounces of sugar. Add a pint of boiling water and bring to boil again. Add the juice of the lemons when water is cool. Strain.

Beef Tea.—Shred 1 lb. of shin of beef into an earthenware jar or glass jar containing a pint of cold water and a pinch of salt. Cover with a lid and place in a saucepan of boiling water. Stir occasionally. Allow it to simmer gently for three or four hours; then strain and it is ready for use.

Beef tea is of little value as a food but is useful in stimulating the flow of gatric juice in the stomach; it thus acts as an appetiser.

Milk Jelly.—Put $\frac{1}{4}$ ounce of gelatine, $\frac{1}{2}$ ounce of white sugar, $\frac{1}{2}$ pint of milk and the peeled rind of half a lemon into a saucepan and stir over a gentle heat until the gelatine is dissolved. Don't boil. Strain into a jug and stir occasionally until cool. Pour into moulds and put in cool place to set. When set, turn out and serve with pureed fruit or apple jelly.

Egg Jelly.—Put $\frac{1}{4}$ ounce of gelatine, $\frac{1}{2}$ ounce of sugar, the peeled rind and strained juice of a lemon and half a pint of water into a saucepan. Stir over a low heat until the gelatine is dissolved. Do not boil. Strain into a jug and allow to cool slightly. Beat up an egg and add to it the mixture, stirring all the time. Strain again. Pour into moulds and put on ice to set. When set, turn out and serve alone or with sliced orange.

Imperial Drink.—Boiling water 1 pint, juice of 1 lemon, cream of tartar $\frac{1}{2}$ oz., sugar 2 tablespoonfuls, or dissolved saccherine 6 pellets. Method: Put all ingredients into a jug, adding boiling water last. Cover closely until cool, then strain and use.

Fresh Fruit Drink.—Orange and grapefruit juice are impalatable if diluted with too much water. Use half as much water as the amount of fruit juice. Sweeten if necessary. Strain.

CHAPTER VII.

TREATMENTS

ENEMA

An enema is an injection of fluid into the rectum for the purpose of cleansing the bowel in which case it must be expelled, or to provide medication or nourishment when it must be retained. An enema should be given only on the order of a doctor.

Equipment Necessary for a cleansing enema. An enamel tray on which the following articles are set:—An enema can or funnel fitted with rubber tubing, a stop cock and rectal tube, which should first be tested to see if they are in good order and not blocked, after which the stop cock is turned off. A bowl containing a vaseline swab or piece of paper. A kidney tray to receive the soiled tube. The solution most commonly ordered is soap and water mixed in the following manner:—Two tablespoons of soap jelly are thoroughly melted by the addition of hot water, this is made up to two pints with warm water and prepared to a temperature of 105° F. The solution is then poured into the can, all froth removed, and the whole tray covered with a mackintosh and drawsheet.

Procedure.—The bed is screened and the procedure is explained to the patient. The tray is taken to the bedside with a warmed bedpan. The blinds are drawn, the windows closed and the quilt is folded back. The bed-clothes are then loosened and if the patient's condition permits he

should be turned on his left side with his knees flexed. The mackintosh and drawsheet are then placed under the buttocks to protect the bed (if these are not already on the bed). The rectal tube is now lubricated with the vaselined swab and after allowing some solution to run through the tube into the kidney tray, it is inserted into the rectum for about four inches. the fluid is allowed to pass slowly through the tube until one or two pints have been given, the stop cock is turned off, the tube gently withdrawn, disconnected from the stop cock and placed in the receiver. The patient is assisted on to the bedpan and supported with pillows, toilet paper being left within reach.

The tray is covered and removed for cleansing, boiling, and putting away. The rectal tube should be irrigated under running water and well cleansed before being boiled. Rubber tubing should be boiled for not longer than 5 minutes, then hung up to drain and dry before putting away. Rubber tubing becomes soft very quickly and will perish unless it is well looked after. The nurse should always scrub her hands at the completion of this procedure. The result of an enema should be noted carefully and kept for inspection if necessary. A Higginson's syringe may be used instead of the funnel, tubing, and can. The weighted end of the syringe is placed under the water which is contained in a bowl. The bulb is compressed a few times. The nozzle is then smeared with vaseline and inserted gently into the rectum. The bulb is then compressed gently, causing the fluid to be forced into the rectum. This is continued until the required amount of fluid has been used.

To Make Soap Jelly.—Take about 2 ounces of pure castile soap and shred; mix with about 4 or 5 ounces of boiling water and boil to a jelly.

HOT WATER BAGS

The use of hot water bags is such a common-place in private homes, that it is difficult to realise what a very great danger attaches to their use with sick people. Very serious burns can result from bags which do not seem to be very hot, and a patient can sometimes have a long period of suffering and expense before the burn is healed.

To fill a Bag.—Water must never be hotter than 180° F., therefore place a small cupful of cold water first in the bag. Expel the air from the bag by rolling it on the table. With the bag flat on the table, pour water into it from a jug, gradually raising the neck of the bottle as the water enters. When two-thirds full, expel air, and screw cork in firmly. Inspect the bag for blisters or leaks at the cork or on the surface. Cover with a thick flannel, heavy towelling or knitted cover, which should completely enclose the neck also, and be tied. Place near the patient but between the first and second blankets.

Although the use of hot water bags for all patients must be accompanied with great care, their use with the following types of patients requires particular precautions:—Patients unconscious as a result of anaesthetic, illness or accident, paralysis, mental conditions, children, old folk, patients having severe pain. In many hospitals, the use of hot water bags for anaesthetic or unconscious and paralysed patients is forbidden. If bags are used, they must have two covers, the second being put on from the opposite end. The position of these bags must be inspected and changed every 10 minutes. Old people, children, and mental patients can often be kept sufficiently warm by the use of warmer personal clothing, and long, woollen bedsocks, and by a

flannelette blanket between the patient's body and the sheet. Patients with severe pain must be watched, as they may not feel the heat, or they may remove the cover in order to gain more heat for the relief of pain.

"Up" patients in a ward should not be permitted to give bags to other patients.

When not in use hot water bags should be slightly inflated so that the sides are not touching; they should be kept in a cool place, away from dampness, and preferably hanging up.

FOMENTATIONS

Hot Fomentations are often applied for the relief of pain or for the relief of inflammation.

When applying hot fomentations everything should be in readiness before commencing. The patient should be made comfortable and ready for the application and be told what is going to be done.

Articles Required.—A tray, two bowls heating, ready to carry the foment to the bedside. The kettle boiling. A piece of flannel for the foment cut to two or three times the required size. Some strong cotton material to wring the foment dry. Oil silk or cotton wool, a bandage and safety-pin to secure the foment in position at the bedside. The oil silk or other protective material and the cotton wool should be at least one inch larger than the foment.

Method.—Place the wringer in a warm bowl with the ends hanging over the side, fold foment to required size, then place it in the middle of wringer and fold in the sides. Next pour boiling water over this and thoroughly wring dry by twisting the ends of the wringer in opposite directions. Without undoing the wringer the whole is placed in the

heated bowls and carried to the bedside; the foment is then shaken out once, tested on the forearm, and gently applied, oil silk placed over it, covered by the cotton wool and the whole bandaged in position and secured with a safety-pin.

Turpentine Fomentation is made as an ordinary fomentation, but first put the amount of turpentine which has been ordered (about a dessertspoonful for an average size foment) into the heated bowl, pour in the boiling water and then place the middle of the foment and wringer into this mixture. This method ensures the thorough mixture of water and turpentine, whereas sprinkling turpentine on flannel causes stronger concentrations of turpentine in special places. The skin must be inspected every 10 minutes for signs of redness and the foment is removed if redness appears.

POULTICES

Linseed Poultice is ordered to relieve pain and inflammation in conditions such as pneumonia. As linseed loses its heat very quickly, everything must be in readiness before commencing, the patient made comfortable, a binder, cotton wool and safety-pin placed in readiness at the bedside. A screen is necessary if the patient is in a ward.

Articles Required for Making the Poultice.—Two bowls or plates warming for carrying the poultice to the bedside. A warmed bowl for mixing. A spatula or knife standing in boiling water for stirring and spreading the poultice evenly. Water boiling. The linseed meal and a spoon or paniken to measure it with. A piece of old linen or brown paper cut to the required size on which the poultice is to be spread. A single layer of wide mesh gauze cut to the same size for

laying over the top of the poultice. A poultice board or paper which protects the table.

Method.—The patient should be screened and partially prepared before mixing the poultice. Measure out the boiling water into the warmed bowl (about 10 ounces will make a suitable poultice for the throat, and 15 to 20 ounces for the chest). The meal is then stirred in quickly, sufficient being added until the mixture leaves the side of the bowl, then rapidly stirred two or three times and turned out onto the prepared linen. Spread evenly with the heated and moistened spatula, making the poultice $\frac{1}{4}$ to $\frac{1}{2}$ inch thick; the edges of the linen are quickly turned over, and the poultice rolled from either end to the centre, placed between the warmed plates or basins and taken to the bedside.

The bandage or binder is placed in position, the poultice laid on the cotton wool and tested on the nurse's forearm. It should be applied carefully, then firmly bandaged into position, the bandage or binder being secured with a safety pin. For patients with a sensitive skin, olive oil may be smeared over with a piece of cotton wool before applying the poultice. The length of time the poultice is left in position will vary according to orders, but linseed poultices are usually removed after thirty minutes; olive oil helps to remove any bits of linseed adherent to the skin; the area should be inspected carefully for any redness. Cotton wool is left on the area after the poultice has been removed.

Precautions.—Have everything in readiness before commencing. Do not make the poultice too thin or it will run. Do not make it too thick or it will crumble and become hard and dry. Always test the heat before applying. Avoid draughts.

Antiphlogistin is a preparation of clay and medication, and is one of the methods used for applying heat for the relief of pain or inflammation. Its great advantage is that it retains its heat for some time, therefore can be left in position as long as twelve hours which allows a very sick patient more rest without disturbance. It is particularly useful for applying at night.

It is contained in a tin which is heated by standing in boiling water, and allowing the water to simmer; the water must not boil over into the tin.

The Articles Required.—A poultice board or paper. A piece of old linen cut to the required size. A single layer of gauze the same size. A spatula for spreading the antiphlogistin. Two bowls or plates warming. A piece of cotton wool cut to extend one inch beyond the poultice. A bandage or binder to secure the poultice in position. The patient should be screened if in a ward, and the window closed.

Method.—As soon as the antiphlogistin is hot enough it is spread evenly on the linen with the spatula, a piece of gauze placed over it, the ends of the linen then turned in, the poultice folded up and placed between the warmed basins or plates, and carried to the bedside.

The application is the same as used for the linseed poultice, explaining to the patient first, what is going to be done, and always being careful to test before applying.

Mustard Poultice

This usually refers to one in which mustard and linseed are mixed in certain proportions. For a child, one part of mustard to fifteen parts of linseed. For an adult, one part of mustard to five parts of linseed. The proportions should be accurately measured out, well mixed and placed in readiness.

To Make.—The method of making is the same as that used for the linseed poultice.

The method of applying is as for the linseed, but as mustard burns very readily, the precautionary measure of smearing the area with olive oil is in this case necessary.

Mustard poultices should never be left on longer than 20 minutes; the edge should be raised every 10 minutes to inspect for redness, when the poultice should be removed immediately, the area swabbed again with oil and cotton wool applied.

Mustard Leaf

Moisten plaster with warm water to release the irritation properties. Place on clean skin surface, cover with cotton wool and secure in position with a bandage or a binder. Leave in position 10 to 20 minutes. Watch for any extreme reddening of the skin. On removal, apply warm Olive Oil and leave area covered with the cotton wool held in position by a bandage or binder.

Starch Poultice

A starch poultice is applied to remove crusts and scabs. Very often boracic is mixed with the starch in the proportion of two ounces of powdered starch to one teaspoon of boracic powder, these are mixed together into a smooth paste with the smallest amount of cold water which will dissolve the starch. Boiling water is then added until it turns clear and thick. A piece of linen is cut to the required shape and size, then wrung out in cold water, the starch mucilage is poured on; it is usually applied just warm.

To Apply.—The part to which the poultice is to be applied, should be cleaned with olive oil first, then the

poultice applied, over which oil silk may be placed, and the whole secured in position by means of a bandage.

To Remove.—When removing the poultice, great care should be taken not to cause any pain as the poultice, when dry, adheres to the skin. A small tray containing swabs, forceps, olive oil and boracic lotion will be required, and with the aid of these, the poultice can be gently and gradually raised and removed.

COLD APPLICATIONS

A cold application is often ordered for a sprain to check inflammation and swelling, and also to relieve pain; it is useful sometimes for headaches and sore throats.

To Apply a Cold Compress, a single layer of moistened material is used and left uncovered, this brings about cooling by evaporation of water. Ice is necessary to make the compress effective, a large piece can be placed in a bowl of water and two pieces of material cut to the required size, one wrung out of the ice cold water and applied, the other being left in the water ready for application.

These compresses need changing every three minutes on a small area and up to fifteen minutes over large areas.

Special Evaporating Lotions may be used to bring about a more rapid chilling. These have methylated spirit added, one part of spirit to three of water.

Cold Dressings are made by placing a piece of cotton wool between two or more layers of lint, and wringing them out in cold water. This dressing is then applied to the painful area and secured in position by means of a bandage.

It is often used with relief in the treatment of catarrhal laryngitis.

MEDICINES

A few simple rules in regard to the proper care of medicines should be understood and applied in every home.

(1) Keep all medicines, pills, ointments, lotions, etc., in locked cupboards in private homes, as small children are very liable to take anything from bottles.

(2) Have all bottles and containers clearly labelled, with poisonous drugs in a separate part of cupboard. For poisons some distinctive mark is necessary, such as a pin projecting from the cork.

(3) Use marked medicine measures in preference to spoons, which vary in size.

(4) Read the label twice before pouring out, and again after pouring out.

(5) Shake the bottle well and invert once or twice.

(6) Hold the measure level with the eye while pouring, and keep the label clean by pouring from the opposite side to the label.

(7) Make as palatable as possible. Bitter powders are given in capsules or in jam, syrup or honey. Powders are placed well back on the tongue and followed quickly by a drink of water. Oils may be given in lemon or orange juice.

Aperients.—It is necessary that patients confined to bed have a bowel motion once daily, or at the least, once every second day. A daily motion can often be encouraged by judicious dieting, e.g., abundance of fluids, and foods containing roughage such as green vegetables, fruits (including skins of apples, pears, etc.), dried fruits, whole grain cereals, etc. If aperients are necessary, it is wise to have a doctor's advice, as a bad habit is liable to begin which may persist throughout life.

Pouring of Medicine: The left little finger removes and holds the cork; the thumb is placed at the level of the dose to be given; the glass is held at the level of the nurse's eye; the medicine is poured out away from the label.

Castor oil is ordered in special cases of intestinal disorder. It is made more palatable by moistening and heating the medicine glass with hot water. Pour some lemon or orange juice into the glass, taking care not to touch the sides of the glass; pour in the castor oil; cover the oil with lemon or orange juice. Give the patient a slice of lemon or orange juice to suck immediately before and after taking the mixture.

CHAPTER VIII.

BANDAGING

(According to the British Red Cross Society Home Nursing Manual No. 1, Ninth Edition)

Bandages may be of three kinds:—

(1) Triangular.

(2) Roller.

(3) Special—such as "many-tail," "four-tail," and "T"-bandages.

(1) Triangular Bandages.

The triangular bandage is principally used in first aid, and for slings to support an arm after injury. For a description of its application the reader is referred to B.R.C.S. First Aid Manual, No. 1.

(2) Roller Bandages.

Uses.—Roller bandages are used for the following purposes:—

(1) To cover and retain dressings and splints in position.

(2) To exercise pressure on a part, in order to prevent or reduce swelling.

(3) To provide support for a part, as a sprained or dislocated joint.

(4) To prevent and control hæmorrhage.

(5) To restrict movement.

(6) To correct deformity.

Materials.—Roller bandages are composed of strips of different material, of varying lengths and widths, tightly rolled.

Cotton or muslin bandages are commonly used for covering and fixing dressings.

Unbleached calico bandages are useful for fixing splints in position and giving pressure.

Flannel is often used for abdominal and chest bandages and for rheumatic joints.

Crepe bandages give a firm, even pressure and are frequently used in cases of varicose veins of the leg.

Book muslin is used for making plaster-of-Paris bandages.

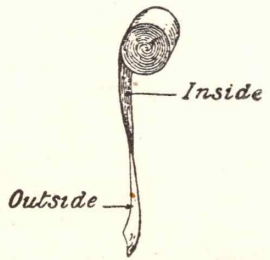


Fig. 3—Single-headed Roller Bandage, showing Head, End and Sides.

Parts of a Roller Bandage.—The roller bandage consists of the *free end or "tail"* and the *roll or "head."* Its two surfaces are spoken of as the *inner* and *outer* surfaces. (Fig. 3.)

The single-headed roller bandage is the one in common use, rolled straight up from one end to the other.

The double-headed roller bandage is one which is rolled up

from either end towards the centre so that two "heads" are formed (Fig. 4.)

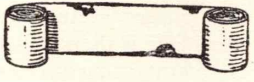


Fig. 4—Double-headed Roller Bandage.

The double-headed roller bandage may be quite simply made by pinning or stitching together the ends of two single-headed bandages of equal length and width.

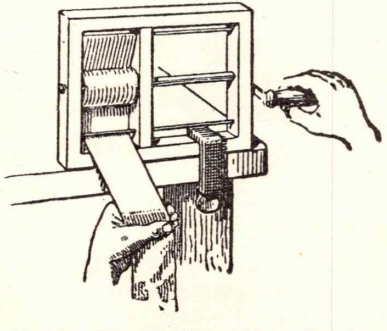


Fig. 5—Rolling Machine. The Handle, with the Rod it turns, is pulled out when the rolling is complete.

Rolling a Bandage.—Roller bandages may be rolled by hand or on a machine (Fig. 5). The two essentials in rolling up a bandage are that it be done tightly and that the edges be even. Any frayed edges should be cut off.

In rolling up by hand, begin by making a few rolls at one end. Then hold the bandage with the roll underneath, the thumbs above and the fingers beneath the strip and the ball of the thumbs kept pressed against the roll so as to keep the edges even. The bandage is then rolled up until the end is reached, the fingers maintaining pressure on the roll the whole time to keep it tight and firm. If a second person is available to hold the end taut while the bandage is rolled the process is greatly simplified, and running the bandage over the back of a chair will be found helpful.

Widths and Lengths of Roller Bandages.

The widths and lengths of roller bandages in general use are as follows:—

Part Bandaged	*Width*	*Length*
Fingers	½-1 inch	1½ yards.
Arm	2-2½ inches	4-6 yards.
Leg	3-3½ inches	6-8 yards.
Trunk	4-6 inches	8 yards.
Head	2 inches	6 yards.

Rules for Bandaging.

1. See that adequate support is given to the part while the bandage is applied. Holding an arm or hand out to be bandaged is very tiring for the patient.

2. Stand in front of the patient whilst applying the bandage.

3. Bandage the limb in the position in which it is to remain.

4. Hold the bandage with the head uppermost and

apply the outer surface of the bandage to the part to be bandaged.

5. Bandage from the inner to the outer side of the limb, beginning at the bottom and working upwards. Abdominal bandages are the one exception, being applied from above downwards.

6. In bandaging limbs, the head of the bandage should be held in the right hand when the limbs of the left side are being bandaged, and in the left hand when the limbs of the right side are dealt with.

7. Never unroll more than a few inches of bandage at a time.

8. Secure the bandage with the first two turns and let each successive turn cover two-thirds of the previous one.

9. Finish the bandage on the outer side of the limb and secure the end with a safety pin.

Points to be Observed.

1. See that the bandage gives firm and even pressure throughout.
2. See that no swelling or blueness of the extremities is caused below the bandage. If a bandage is too tightly applied, circulation through the limb may be interfered with and the result may be serious if the bandage is not slackened at once.
3. See that the dressing is covered and held firmly in place, and that the bandage is neat in appearance.
4. Make sure that the patient is perfectly comfortable.

Application of Roller Bandages.

Methods.—There are four ways in which a roller bandage may be applied:—

(a) Simple spiral.

(b) Reverse spiral.

(c) Figure-of-eight.

(d) Spica.

(a) **Simple Spiral** is used for parts which are of uniform thickness, such as a finger or wrist (Fig. 6). The bandage is applied obliquely round the part, each turn covering two-

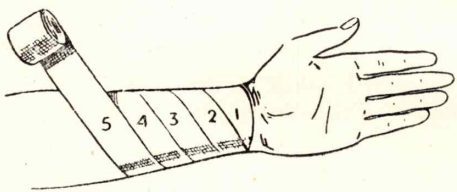


Fig. 6—Simple Spiral Bandage.

thirds of the preceding one, and the edges being kept parallel.

(b) **Reverse Spiral** is used for parts which vary in thickness and upon which, in consequence, the simple spiral will not lie evenly (Fig. 7). One or two simple spiral turns are usually made to carry the bandage to the point at which the spiral can be no longer employed, and then the lower edge of the last spiral is fixed with the thumb about halfway between the midline and outer surface of the limb. The

bandage is then reversed and brought down and carried round the limb, when another reverse is made immediately above the former one. These reverses are repeated as far as necessary and the bandage completed with one or two spiral turns straight round the limb. Care should be taken that each reverse occurs immediately above the previous one, so that the pattern is even. Each turn should cover two-thirds of the preceding one, as in the simple spiral.

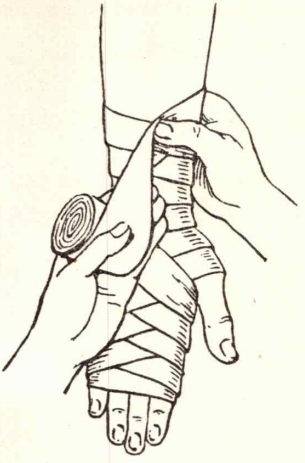


Fig. 7—Reverse Spiral Bandage.

(c) **Figure-of-Eight** is used for bandaging uneven parts and for covering joints. It consists of a series of loops encircling the part in the form of a figure-of-eight, the upper loops being completely hidden by the successive turns and the lower loops forming the pattern, each one covering two-thirds of the preceding loop and crossing in the same line.

(d) **The Spica** is a form of the figure-of-eight and is used to bandage the thumb, shoulder, groin, etc.

Bandages for Hand, Wrist, Forearm, Elbow and Arm.

Hand Bandage.—With the hand pronated—that is, the palm held downwards—fix the bandage by a turn round the wrist and carry the roll obliquely over the back of the hand

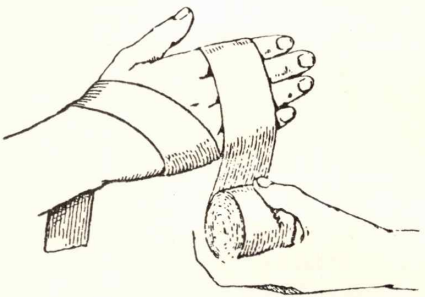


Fig. 8—Bandage applied to Hand.

to the side of the little finger (Fig. 8). Carry the bandage round the palm, encircling the fingers with one horizontal

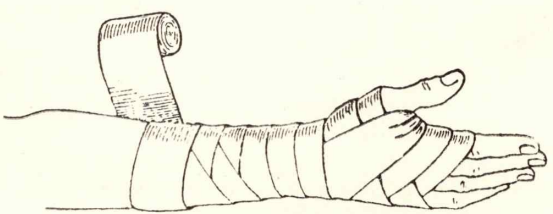


Fig. 9—Bandage for Hand and Forearm, showing Reverses.

turn, so that the lower border of the bandage just touches the root of the nail of the little finger. Carry the bandage once more round the palm and then return obliquely to the wrist. The figure-of-eight turns round the wrist and hand are repeated until the hand is covered and the bandage is then finished with a spiral turn round the wrist.

Wrist, Forearm and Upper-Arm Bandages.—The wrist and forearm are bandaged by the use of the simple and reverse spiral until the elbow is reached (Fig. 9).

To cover the elbow.—Bend the elbow at right-angles. Lay the outer side of the bandage on the inner side of the

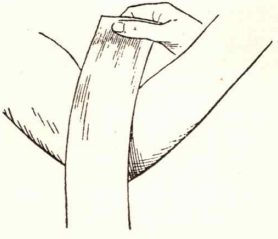


Fig 10—Commencing Bandage to cover tip of right Elbow. The hanging end is passed to inner side as the first turn is being completed.

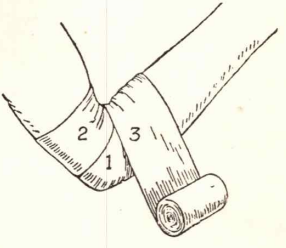


Fig. 11—Bandage to cover tip of right Elbow, showing early turns.

joint and take one straight turn, carrying the bandage over the elbow tip and round the limb at the elbow level (Fig. 10). The second turn is made to encircle the arm and the third the forearm, each of these turns being made to

cover the margins of the first turn (Fig. 11). The figure-of-eight round forearm and arm is then repeated some six or more times, each turn being made only just above and below the preceding turn, so that rather less than the regulation one-third of the bandage width is left uncovered each time (Fig. 12). If wider turns are made, the elbow tip tends to slip from under the bandage and is soon exposed.

The upper arm is bandaged as is the forearm, by a succession of reverse spirals, and the bandage may be carried on from the forearm, or elbow, or started independently, as most convenient.

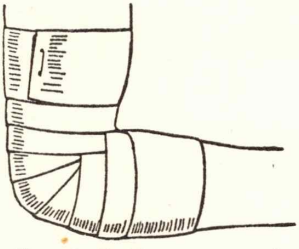


Fig. 12—Bandage to cover tip of Elbow completed.

Finger Bandages.—With the hand pronated, the bandage is first fixed by two spiral turns round the wrist and then carried obliquely over the back of the hand to the top of the finger to be covered (Fig 13). Spiral turns are then made round the finger from the tip to the root and the bandage is carried obliquely over the back of the hand to the wrist. It is completed by one straight turn round the wrist and is either tied to the original end or fastened with a safety pin. In this way all four fingers may be covered (Fig. 14). As each finger is completed, the bandage should encircle the wrist once before being carried over the back of the hand to the next finger (Fig. 15). (*See* Note, page 105, First Aid Manual.)

To cover the finger-tip.—With the hand pronated, take one or two turns round the wrist and carry the bandage

obliquely over the hand to the root of the finger to be covered. Take a loose spiral turn round the finger to reach the tip, and carry the bandage straight over the tip of the finger, securing it in position by holding the finger and bandage between your own forefinger and thumb (Fig. 16).

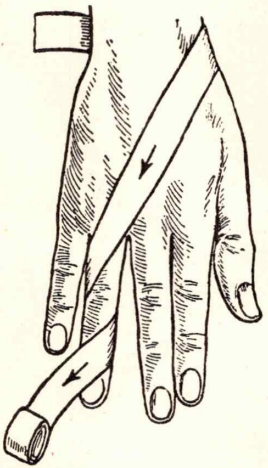


Fig. 13—Commencement of Finger Bandage.

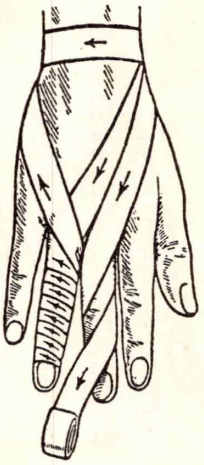


Fig. 14—Bandage Carried to Second Finger.

Carry the bandage over the tip of the finger backwards and forwards, securing the folds in place with your finger and thumb. The bandage over the tip of the finger is made first to pass over the centre; the second turn is made to lie a little to one side of the tip, and the third to lie a little to the opposite side. Three or four turns thus made are

usually enough, and the bandage is now taken straight round the finger near the tip once or twice to secure the folds. Care must be taken to bring the bandage round the finger in the correct direction, from within outwards; that

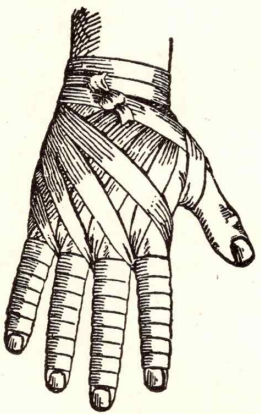


Fig. 15—Continuous Finger Bandage.

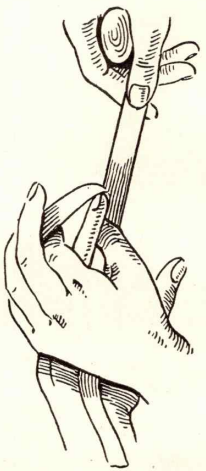


Fig. 16—Covering tip of Finger.

is, carrying it over the back of the finger from the thumb side, or it will be in the wrong position when the finger bandage is completed. Cover the finger with spiral turns to the root, and then carry the bandage over the back of the hand to the wrist in the usual way.

Thumb Spica Bandage.—With the hand held so that the back of the thumb is uppermost, take two turns round the wrist and carry the bandage over the back and outer part of the thumb. Encircle the thumb with one or two straight

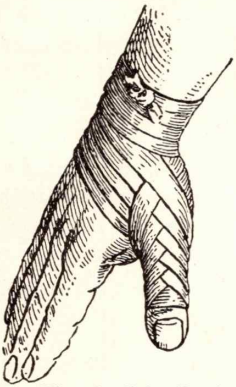


Fig. 17—Spica Bandage for Thumb.

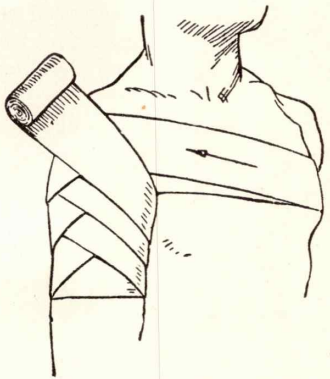


Fig. 18—Spica Bandage for Right Shoulder.

turns so that the lower border of the bandage is about one-half inch above the root of the nail (Fig. 17). Carry the bandage back over the back of the hand, round the wrist, and repeat the figure-of-eight turns round thumb and wrist until the ball of the thumb is completely covered. Complete the bandage with one straight turn round the wrist.

Spica Bandage for Shoulder.—Place a small pad of cotton-wool in each axilla. Take a 3-inch bandage and fix it with two spiral turns round the upper part of the arm

(Fig. 18). Carry the bandage over the shoulder, across the back and under the opposite armpit. Bring it back across the chest and arm, round under the armpit and over the shoulder again, covering two-thirds of the previous turn. This forms a figure-of-eight round the arm and the body, and the turns are repeated until the whole shoulder is covered. The bandage should be secured by a pin immediately over the injured shoulder.

Bandages for the Foot, Ankle and Leg.

If the patient is in bed, the heel should be elevated on a support about 6 inches high. If he is up and about, he should be seated in a chair with the foot supported on a stool or another chair. To avoid stooping, the nurse may, if she prefers, sit opposite the patient and take his foot on her knee.

Foot and Ankle Bandage.—Take one or two turns round the ankle to fix the bandage, and then take it obliquely

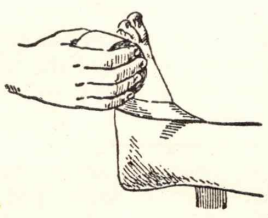


Fig. 19—Commencing Bandage for Foot and Ankle.

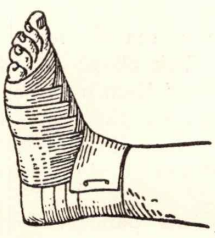


Fig. 20—Bandage for Foot and Ankle completed. Heel left bare.

across the back (dorsum) of the foot to the root of the little toe (Fig. 19). Make one horizontal turn right round the foot at this level and then carry the bandage back over the foot and take a turn round the ankle just above the heel. Figure-of-eight turns are then repeated round the foot and ankle, each turn overlapping the preceding turn by two-thirds of its width, until the whole foot is covered (Fig. 20).

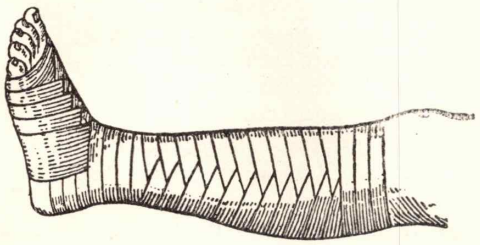


Fig. 21—Bandage for Left Lower Limb, carried as far as the Knee, showing figure-of-8 for foot, ascending simple spiral for lower part of Leg, ascending reverse spiral for Calf of Leg, and ascending simple spiral just below Knee.

Leg.—If the bandage is to be continued up the leg, the reverse spiral is used, as for the arm (Fig. 21).

To cover the heel.—The leg should be supported so that the heel projects well over the edge of the chair, stool or cushion on which it is placed. The foot should be kept at right-angles to the leg. Two turns are made round the ankle, and the bandage is then carried across the front of the

ankle, round the outer side, and over the tip of the heel, so that the centre of the bandage lies immediately over the tip. The bandage is then carried round the ankle just above the tip of the heel, so that the margin of the bandage covering the tip of the heel is well covered. It is then brought over the ankle and taken round the foot just below the tip of the heel so that the other margin of the bandage covering the heel tip is now also covered. The turns are repeated, each turn being made just above and below the preceding one until the heel is well covered and the bandage extends from half-way along the foot to well above the ankle (Fig. 22).

Fig. 22—Bandage to cover tip of Heel.

Bandage for the Knee.—Flex the knee. Lay the outer side of the bandage against the inner side of the knee and take one straight turn over the knee-cap. The bandage is then

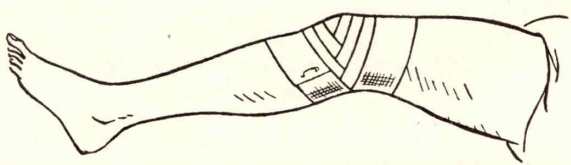


Fig. 23—Bandage for the Knee.

brought round the knee just below, and then just above, so that the margins of the bandage covering the knee-cap

are covered as in the case of the elbow and heel bandages. The turns are repeated below and above the joint until the whole knee is covered, and the bandage is then secured by one straight turn round the leg (Fig. 23).

Hip Spica Bandage.—Place the outside of the bandage on the inner side of the thigh, about 6 inches below the groin (Fig. 24). Carry the bandage horizontally round the limb and make three or four ascending reverse spiral turns round the thigh. Carry the bandage from within outwards over the front of the groin and up round the hip and back, passing over the prominence of the hip bone on the opposite side. Bring the bandage down over the abdomen to the outer side of the thigh, and repeat the figure-of-eight turns round the body and thigh until the hip is covered.

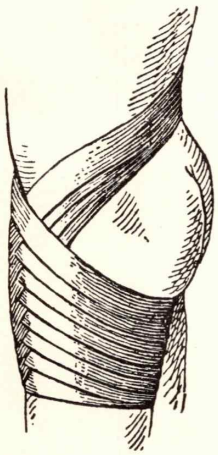


Fig. 24—Spica Bandage for Left Hip. If the crossings were farther forward a Spica of the Groin wou'd be made.

Spica Bandage for Groin.—This is applied in the same way as the spica for the hip except that the bandage is started higher up, the reverse spirals are omitted and the crossings are made over the front of the groin instead of on the outer side of the front of the thigh.

Double Spica Bandage for Groin.—Lay the outer surface of the bandage over the right groin and pass the bandage round the thigh, carrying it up over the front of the right groin to the left hip, round the back and right hip, and over the lower part of the abdomen to the outer side of the left thigh (Fig. 25). Pass the bandage under the thigh, up the left groin, round the back and right hip and down again to the inner side of the right thigh. These turns, which really form a double figure-of-eight round the body and right thigh, and round the body and left thigh, are repeated until both groins are covered, each turn being slightly higher than and covering two-thirds of the preceding one.

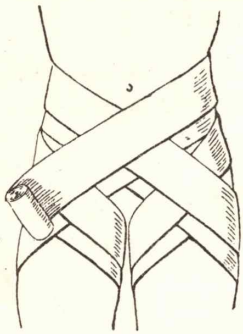


Fig. 25 — Double Spica Bandage for both Groins.

Head and Other Bandages.

Capelline Bandage.—This bandage is sometimes used when the whole scalp is to be covered.

A double-headed roller bandage is used.

The patient should be seated and the operator stand behind the patient's chair. The centre of the outer surface of the bandage is placed in the centre of the forehead, the lower border of the bandage lying just above the eyebrows (Fig. 26).

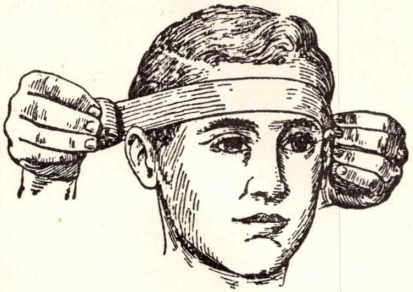


Fig. 26—Commencing Double-headed Roller Bandage for Head.

The heads of the bandage are brought round well down to the back of the head, over the temples, and above the ears to the nape of the neck. Here the ends are crossed, the upper bandage being carried on round the head and the other brought over the centre of the top of the scalp to the root of the nose (Fig. 27). The bandage which encircles the head is now brought over the forehead, covering and fixing the bandage which crosses the scalp, and which is now brought back over the scalp, slightly to one side of the centre and covering the margin of its original fold (Fig. 28). At the back it is again crossed and fixed by the encircling bandage and is brought back over the scalp to the opposite side of the centre line, and now covering the other margin of its original fold. These backwards and forwards turns are

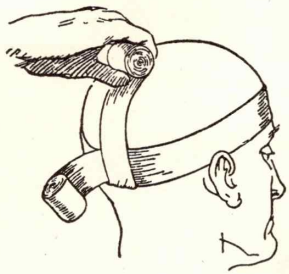


Fig. 27—One end being continued round the Scalp and the other going over it.

repeated to alternate sides of the centre fold, each fold being in turn fixed by the encircling bandage untill the whole scalp is covered. The bandage is completed by a circular turn round the head and pinned in the centre of the forehead (Fig. 29).

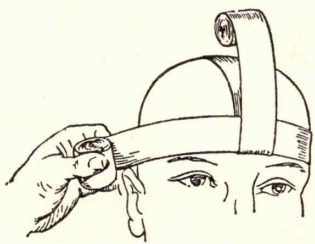


Fig. 28—Scalp turn being secured by horizontal turn.

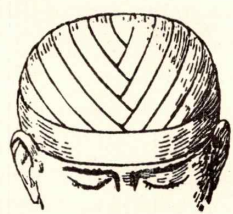


Fig. 29 — Capelline Bandage completed.

Ear Bandage.—This may be applied in two ways:—

Method I.—Lay the outer surface of the bandage against the forehead and carry the bandage round the head in

one circular turn, bandaging away from the bad ear, towards the good side (Fig. 30). Carry the bandage round to the back of the head, low down in the nape of the neck, and bring it up over the lower edge of the dressing to the forehead. Repeat this, each turn being slightly higher than the previous one, until the whole dressing is covered. The bandage is completed by one straight turn round the head and pinned in the centre of the forehead. Some people prefer to take the bandage round the forehead between each turn covering the dressing, but this makes a bulk round the head and is not really necessary.

Fig. 30—Ear Bandage.

Method II.—In this method the bandage is carried over the head and round the chin, covering the dressing vertically instead of horizontally as in Method I. It is not nearly as comfortable a bandage and is now seldom used.

Eye Bandage.—Lay the outer surface of the bandage against the forehead, and take one circular turn round the head, bandaging away from the injured eye (Fig. 31). Carry the bandage on round the head until it reaches the ear

on the sound side for the second time. Take it obliquely to the back of the head, under the prominence at the back of the skull, and from there bring it upwards beneath the ear of the affected side, over the pad on the eye to the circular turn to which it should be pinned.

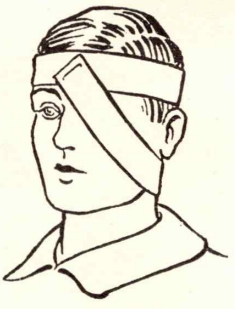


Fig. 31—Eye Bandage.

Breast Bandage.—(1) *To support one breast.*—Take a 3- or 4-inch bandage and, starting below the breast to be covered and working away from it towards the sound side, carry the bandage twice round the chest (Fig. 32). Bring the bandage up under the breast to

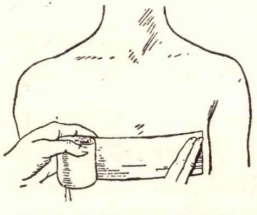


Fig. 32—Commencing Bandage for Left Breast.

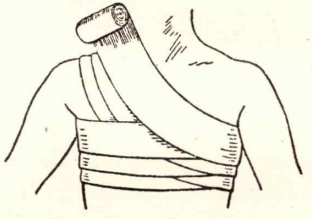


Fig. 33—Bandage to support Left Breast.

be supported, over the opposite shoulder, obliquely down across the back, under the arm and once more round the chest, covering two-thirds of the previous turns (Fig. 33). These turns are repeated until the breast is sufficiently covered.

(2) *To support both breasts.*—Start with two circular turns round the chest as for the single breast, starting (say) under the right breast, and bring the bandage up under the right breast over the left shoulder, obliquely down across the back, under the right arm and across the front of the chest horizontally. Carry the bandage under the left arm, up across the back to the right shoulder, and down across the chest under the left breast. From here it is passed under the left arm and horizontally across the back to beneath the right breast again. These turns are repeated until both breasts are covered.

Stump Bandage.—Using a 4-inch bandage, take circular turns round the stump about 6 to 8 inches from its end.

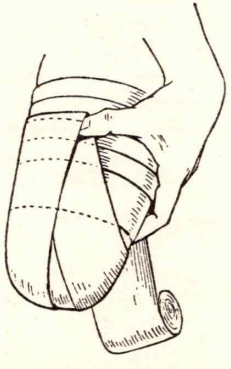


Fig. 34—Bandage for Stump.

Carry the bandage from the midline to the front of the limb straight over the centre of the stump to the same level behind, keeping the loop in position with the thumb and

fingers (Fig. 34). Bring the bandage back to the front, a little to one side of the first layer and covering its margin, and then carry it back again on the opposite side, so that the other margin is covered. Repeat the loops over the stump until the end is covered and secure them by a circular turn round the limb. Carry the bandage obliquely across the stump to the top, covering the margin of the last loop and, passing it under the stump, bring it down obliquely over the front again to cover the edge of the last loop on the other side. Again carry the bandage round the limb and repeat this figure-of-eight until the stump is covered to the level of the first spiral turns made. Finish the bandage with a circular turn round the limb.

(3) Special Bandages.

Many-tail Bandages (Fig. 35) are used for abdominal wounds or for any part where the use of a roller bandage

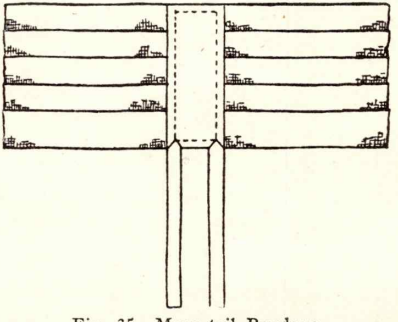


Fig. 35—Many-tail Bandage.

would entail a great amount of movement and exertion for the patient. They consist of a back piece and several strips

or tails of flannel or cotton material stitched across it, each tail overlapping the one above by two-thirds of its width. The back piece is placed under the part to be bandaged, and a tail is taken from either side alternately, and folded over the part, the tails overlapping and firmly covering the dressing.

Bandages for the chest are usually provided with two tails stitched to the top of the back piece and slanting slightly outwards, which pass over the shoulders and are pinned to the front of the bandage, when the other tails are folded over, to keep the bandage from slipping down.

Abdominal bandages are sometimes provided with one vertical tail which is passed over a pad between the legs and prevents the bandage from slipping up. Occasionally in these bandages the lowest tails are made longer than the others so that they may be passed round the thighs for the same purpose.

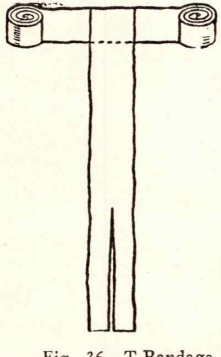


Fig. 36—T-Bandage.

T-Bandages (Fig. 36) consist of two strips of flannel about four inches wide, stitched together in the form of a T. The horizontal strip is made long enough to pass round the body and the vertical strip is passed up between the legs. It is then pinned to the horizontal strip to keep rectal or perineal dressings in position.

Four-tail Bandages are used for the jaw or top of the scalp. They are made from a piece of calico or other suitable material a yard long

and 8 inches wide. This strip is split lengthwise from each end to within 4 or 5 inches of the centre.

(1) *For the scalp.*—Lay the centre of the undivided part of the bandage on the centre of the top of the head. Carry the two front ends backwards behind the ears and tie them at the back of the neck, and bring the two back ends forward in front of the ears and tie under the chin (Fig. 37).

(2) *For the jaw.*—Cut a slit in the centre of the undivided part of the bandage and place this under the tip of the chin. Carry the lower ends upwards in front of the ears and tie on the top of the head. Carry the upper ends round the neck below the ears and tie at the back. The four ends are then tied together over the head (Fig. 38).

Fig. 37—Four-tail Bandage for top of Scalp.

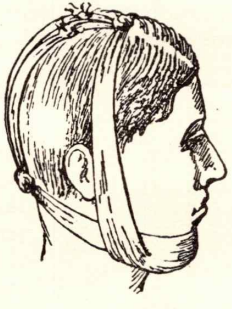


Fig 38—Four-tail Bandage for Jaw.

CHAPTER IX.

THE CARE OF THE BODY AFTER DEATH

The care after death is the last tender office which can be performed for the dead, and will willingly be entrusted by relatives only to those who are sympathetic as well as skilled. To make the body, especially the face, look as natural and beautiful as possible, and to perform this last duty as we would wish toward one we ourselves loved should be our purpose in this case.

When death has taken place, close the eyelids. If the friends are present, leave the bedside for a few minutes. After the friends have left the room, strip the bed of its upper clothes, leaving the upper sheet; remove the garments, hot bottles, water or air cushions, etc., leaving one small pillow under the head if necessary. Straighten the limbs, draw the sheet and tidy the under sheet. Remove any false teeth, rings, and jewellery unless otherwise desired by the friends. Apply a bandage round the jaw and head, not too tightly; tie the ankles and big toes together. Cover the body entirely with the top sheet and leave for one hour. Draw down the blinds and remove everything that has been used from the room, leaving it perfectly tidy. At the end of the hour, having prepared everything beforehand, proceed

to "lay out" the body. Two persons render this task easier, but it can be managed by one.

Thoroughly wash the body all over with water, using plenty of soap. Clean and cut the nails, plug the orifices with cotton wool. Wool in the mouth and nostrils must be so packed that it is not visible. In surgical cases, remove any dressings, tubes, or other appliances; recover the wound after cleansing with white gauze and wool, and fasten with collodion or a bandage. If a bandage is used, it should be stitched, not pinned.

Comb and brush the hair; in the case of a woman plait it in two plaits, and tie with ribbon. Dress in a clean nightgown or the garment provided; white stockings are sometimes used. The arms may be folded across the chest or placed at the sides. Put in a clean under-sheet and draw-sheet, and a clean pillow-case. Cover the body with a clean sheet as far as the chin and cover the face with a clean handkerchief.

In hospitals it is necessary to attach a label, e.g., to the left ankle or the nightgown, with the name of the patient, the ward, date and time of death.

Place a vase containing fresh flowers in the room.

CHAPTER X.

MOTHERCRAFT

FOREWORD

Mothercraft cannot be taught effectively from any book. The following chapters are written as guiding lines to be used in connection with practical teaching which is assumed, will be given by a qualified Plunket Nurse.

Demonstrations should be given on all practical procedures such as bathing and dressing baby, making the bed, preparation of artificial food, etc.

MOTHERCRAFT

By Mothercraft we mean the simple science of the art of good mothering, or in other words, the intelligent and skilled care of infants and young children. This subject is of vital importance from a national point of view, because unless young women come to marriage and motherhood equipped with a knowledge of the essential needs of their families, they cannot be expected to rear healthy happy children, on whom their country can depend for its future citizens.

A knowledge of Mothercraft does not come by instinct—it must be learnt like any other "craft," and no girl should regard her education as complete unless she has learnt some-

thing of the management of a home, and of the principles of child care.

During the last 40 years or so, the falling birth-rate, two wars, and other influences have tended to enhance the value of young lives, and to stimulate interest in the prevention of infant mortality. As a result, there has been established in all civilised countries a system of maternal and infant welfare which aims, not only at the saving of infant lives, but in the promotion of the health of those who survive to be the future men and women.

In New Zealand this special work has been undertaken largely by the Plunket Society, which was founded by Sir Truby King in 1907, and which, in the course of time has established centres throughout the Dominion where parents may be advised about their own health and that of their babies and pre-school children. In addition, the Government and Hospital Boards, have established ante-natal clinics where prospective mothers are able to receive full health supervision throughout their pregnancy. The Plunket Society now conducts mothercraft classes for groups of expectant mothers in order to teach them the basic principles of infant care before the baby's arrival.

Finally, the School Medical Service, under the aegis of the State, watches over the health of the children in the primary schools. Hence we have available in New Zealand, facilities for safe-guarding the health of children of all ages. The success of this work which is being carried out in the interests of the community is dependent largely on the willing co-operation of the public, and particularly the parents, who should make the utmost use of the facilities which are offered to them.

THE EXPECTANT MOTHER

A mother's responsibility to her baby begins long before he is born, therefore directly she knows she is going to have a baby, she should consult her doctor, who will supervise her health during pregnancy. In addition, he may recommend that she attend an ante-natal clinic, where a trained nurse will be available to advise on matters which come naturally within her sphere.

The object of this medical and nursing supervision, which is commonly known as the ante-natal care, is to safeguard the health of the mother, in order to promote a normal confinement, and to ensure that the baby will be in good physical condition when born.

As the coming baby is nourished by his mother's blood, and is dependent on her for all he requires for growth and development, it is essential that particular attention be paid during pregnancy to many details which will influence the mother's health and that of her baby. Only the most important of these can be mentioned here, and they are as follows:—

(1) **Diet.**—This should include the following foods:—

Milk.—1¾ pints daily. (Alternatively skim milk or skim milk powder if tendency to fatten.)

Eggs.—1 daily

Fish.—Once or twice weekly. (At least 4 ounces a week.)

Liver or Kidney.—2 to 4 ounces a week.

Meat.—4 to 6 ounces daily on the remaining 5 days.

Vegetables.—2 varieties daily besides potatoes (preferably one green.) Salads are strongly recommended. Use vegetable water in soups etc.

Fruit.—An orange and an apple daily if possible, dried fruits are also advised.

Cheese.—1 ounce daily.

Whole meal, bread and butter. Fluids should be taken freely. Water and fruit drinks are best. Tea or coffee should be taken in moderation. Iodised salt should be used in cooking and at the table. Cod Liver Oil, 1 to 2 teaspoons should be taken daily, or if this is unable to be digested, a concentrated form of Vitamins A and D should be ordered by the doctor.

(2) **Exercise.**—This should be taken daily in the open air. A brisk walk is best, but subject to the doctor's approval, the expectant mother may participate in sports such as golf, tennis and swimming.

(3) **Rest and Sleep.**—The-mother-to-be requires plenty of rest and at least eight hours' sleep every night. The bedroom should be well ventilated. When sewing, reading, etc., the mother should rest with her feet up, as this tends to prevent varicose veins and sore feet. A warm bath at night will promote sleep and keep the skin in good condition. Regular daily action of the bowels is most important.

(4) **Dental Care.**—A dentist should be consulted early in pregnancy, so that decayed teeth may receive attention. The teeth should be well brushed after meals. Correct diet greatly influences the condition of the teeth, hence the importance of foods such as milk, eggs, and green vegetables, which contain minerals such as calcium and phosphorus, which are essential elements in tooth formation.

(5) **Advice available at Clinic.**—The nurse at the clinic will advise the mother regarding clothing, the preparation of the breasts for nursing, the layette and the requirements for the nursery.

Both parents should look forward with pleasure to the coming of the baby, and the father must take his share of the responsibility in protecting his wife from undue worry and work, and in making adequate preparation for the new arrival. Only by this means can a high standard of health and happiness be maintained in the home.

CARE OF THE BABY

In order to keep the baby in good health, there are certain definite essentials, viz., food, fresh air, sunshine and exercise, rest and sleep, bathing and cleanliness, sane management, regularity of habits, and last but not least, love and affection. These simple requirements should be met by all parents. Let us consider how they can be applied in any home.

Type of cot recommended for baby. (See "Modern Mothercraft".)

Baby's Room and Cot.—Baby should always sleep in a cot by himself, and preferably in a room by himself. The room should have a sunny aspect, and should be kept clean and fresh and well-ventilated night and day. The new-born baby requires special care, therefore, for the first week or so, he should be kept indoors, and if the weather is cold a fire may be necessary. After that, he should be kept in the open air and sunlight as much as possible. Place the cot in the garden in the shade of a hedge or tree, or on a balcony or verandah protected by a dark screen from the glare of the sun and from strong winds. In summer, a mosquito net may be necessary to keep off flies and insects. If baby is put out in his pram, see that the wheels are fixed to prevent the pram running away. If baby has to sleep in his parents' room, the cot should be placed on the opposite side of the room from the mother's bed.

The cot should be of the open wire or wicker kind. This can be easily cleaned and conveniently moved about. No drapings or curtains should be used, as they harbour dust and tend to exclude the air, but a piece of muslin or washing cotton material should be fixed round the head of the cot to exclude draughts. The cot should be made with a firm mattress of horsehair or fibre. The shakedown half filled with grain winnowings; a very small pillow of the same material; enveloping and cuddling blanket; bed blanket; small mackintosh with covering drawsheet; sheet; and finally a quilt to give a finish to the cot. Blankets which are soft and fluffy are much warmer than those that are thick and felted. If necessary a hot water bag may be used, protected with a flannel cover, filled with water off the boil, and placed between the two mattresses with the stoppered

end towards the foot of the bed. The baby should be placed on his side tucked into his bed, firmly, securely, but not tightly. This procedure should be demonstrated by a trained baby nurse and practised very thoroughly. Care must be taken to see that he is not too hot, and that he has freedom for movement.

As baby gets older, he can be taken out for a daily outing in his pram. This should be made with a ventilated wicker hood, lined with green. There should be no fringe on the front of the hood, as this is injurious to baby's eyes, owing to its constant movement, when the pram is being wheeled about.

Baby's Clothing.—Baby's clothes should be warm, yet light in weight, non-irritating and non-constrictive. They should be simple, attractive and easy to make. All garments should be made in the loose magyar style, with no constricting bands. They are easy to launder and can be hand trimmed with embroidery, lace, etc., as desired.

Patterns for baby clothes can be obtained from any Plunket Nurse. Usually about three sets of clothes are necessary. The mother is advised not to make pilchers, shawls, bonnets and bibs, as such articles are frequently received as gifts to the baby.

The day outfit consists of a cellular cotton or silk and wool singlet, a fine woollen singlet, napkin, petticoat, dress and bib. In cold weather, a matinee jacket may be necessary, also gloves, bootees and bonnet if baby is out of doors. In warm weather, the petticoat need not be worn. A shawl is necessary for carrying baby about when he is lifted from his cot or pram. Night garments consist of a cotton and woollen singlet, napkin and nightgown.

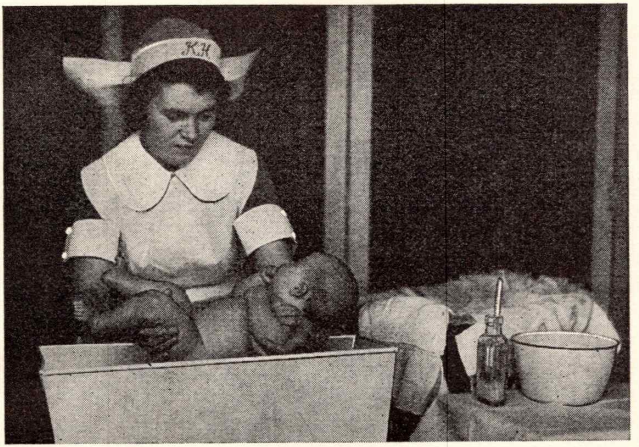
Nightgowns, petticoats and matinee coats should be made from lightweight flannel or any good wool and cotton material. Frocks can be made of cotton, crepe, silk, viyella or clydella. Napkins should be made of Terry (Turkish) towelling or flannelette. About three dozen of these should be provided. The use of water-proof pilchers should be condemned, as these act as a poultice, and are apt to cause irritation of the buttocks.

Baby's clothes should be kept spotless and clean, and should be changed when necessary.

Napkins should be placed in cold water in a covered bucket when taken off baby, and later washed in warm water with a little soap if necessary, boiled, rinsed well and dried outside. No soda or blue should be used.

To wash woollens, make a very strong lather with barilla soap and boiling water. Add this to a basin containing about a gallon of cold water. Put in the woollens and squeeze them through and through, avoid rubbing and wringing. Rinse in plain tepid water. Squeeze the woollens shake and pull into shape and put to dry out of doors on a wire rack or lying flat on a bath towel.

Bathing Baby.—Baby's bath time is perhaps the most interesting and exciting time in his day, especially for his older brothers and sisters. Many people are apt to look upon bath time as play time. Certainly, it is delightful to watch baby in his bath, and mother should on this account try to arrange bath time so that her older children, and father too, could sometimes be able to watch. The great need, however, is to combine business with pleasure and not prolong the bath until baby is chilled.



Nurse should hold both legs, but this babe has supported himself with other leg against the nurse.

Once a mother has become used to the routine of bathing, the whole performance should not take longer than 20 minutes. One of the most important things to remember is to choose a cosy corner in a warm room and to have everything ready before baby is picked up.

For bathing the following equipment will be required:— Bath, hot and cold water, baby soap, bath and face towel, two washers (face and body washer), bathing apron, set of clean clothing, receptacle for soiled clothes, toilet tray containing small jar filled with soft pieces of old clean linen or cotton wool swabs, olive oil, Karitane ointment, safety pins, brush and comb, scissors, and a receiver for used swabs.

Arrange baby's clothing on a fire guard or rack in the order in which they will be required.

Prepare the bath water at a temperature of 105° F. If no thermometer is available, test the water with your elbow. When all is ready, the mother should wash her hands and proceed with the bathing. Undress baby quickly, and wrap in warm towel. First cleanse the nostrils very gently, using pledgets of old soft linen. Next, wash the eyes, then the face with the soft face washer using no soap. Wash the scalp with a little soap, rinse well and dry. Now soap baby's body thoroughly and lift him into the bath, carefully supporting his head and back. Rinse well, give cool sponge if over 6 months of age, lift out and wrap in a warm towel. Dry thoroughly, particularly all folds of the skin. Dress baby quickly, putting on all garments over face and head first and turning as little as possible. Attention to hair and nails is necessary to complete baby's toilet.

The evening toilet will consist in sponging baby's face, hands and buttocks. This is usually done before his 6 p.m. feed. There should be a complete change of clothing for the night.

Feeding Baby.—The best food for baby is his mother's milk. In order to nurse a baby successfully, a mother should be in good health and receiving a well balanced diet as recommended for the expectant mother.

Breast feeding has many advantages. It renders the baby less susceptible to disease, and it is economical in time and money. The milk is present in the breast at the right temperature, and usually in the right quantity. It is free from germs, and contains all the food elements necessary for growth and development.

Suckling by the mother is best and safest for the baby, and best for the mother's health too. Practically every mother can suckle her baby if she wants to, and if she is properly looked after before and after the baby is born. The best bottle feeding is inferior feeding. The baby should be put to the breast at regular intervals during the day from his first day of life if he is well. An eight-hour interval being allowed at night. In each home a daily programme is made to suit the baby and the household.

Baby should be weighed regularly by the Plunket Nurse to make sure he is receiving sufficient food from his mother. When baby is between 6 and 9 months old, he should be weaned gradually.

If for any reason breast feeding is not possible, baby should be fed on modified cow's milk. Milk should be obtained from a reliable source and in cities and large towns pasteurised milk should be used. The milk mixture must always be brought to the boil when made either from raw or pasteurised milk. Thereafter it should be cooled quickly and kept cool, clean and covered.

In order to modify cow's milk for a young baby of say 1 month of age until a doctor or infant welfare nurse can be consulted, it should be diluted with equal parts of boiled water and have 1 teaspoonful of Karilac added to each 3 ounces of milk mixture. It should be boiled for 5 minutes.

N.B. This recipe will be satisfactory for the first few days only.

Every baby should receive fresh raw fruit juice, preferably orange juice, from the age of 2 weeks to prevent scurvy.

Cod-Liver Oil or a substitute is also necessary, to prevent rickets.

Feeding after 5 Months.—After 5 months, whether a baby is naturally or artificially fed, certain additions to the diet are necessary, commencing with strained vegetable juices, and a small quantity of egg yolk and introducing gradually, bone and vegetable broth, vegetable and fruit puree, cereals and hard baked crusts (as teeth appear).

Towards the end of the first year fish and light meat such as minced liver, rabbit, brains, sweet-breads and chicken may be given.

The tendency amongst parents is to give too much cereal and other mushy starchy food, and to neglect the "protective" foods such as milk, vegetables and fruit, eggs, fish and meat, which are all absolutely essential for growth and health.

General Rules for Feeding the Toddler:

(1) Every child requires at least 1 pint of scalded milk daily.
(2) The child should be taught to eat slowly and to chew his food thoroughly.
(3) No food should be given between meals—only water and fruit juice.
(4) Food should be well cooked and served appetisingly.
(5) The most substantial meal should be given in the middle of the day.
(6) Continue to give some raw fruit and vegetable juice daily until the child is old enough to take a fair amount of whole raw fruit.

Nurse preparing baby's milk mixture. Note method of measuring Karilac.

It is not necessary to cook special dishes for a child after one year of age, as the toddler can share in the family dietary. The articles of food recommended for the older child are necessary for every member of the family.

If the mother is wise, she will form a plan or time-table for herself and her baby, for only by this means can the child be established in regular routine. The more simple the plan, the more likely it is to be followed. When certain times are set aside for feeding, sleeping, exercise, etc., the body begins to recognise its special times set aside for sleep and rest.

Regular feeding habits are very easily established if baby is fed four hourly from birth with nothing between feedings except water and fruit juice. If he is really hungry before his bottle is due he should be fed.

Given adequate and regular feeding, the habit of regular sleep is soon established provided baby is tucked down comfortably and securely at the same time every day. A newly born baby sleeps nine-tenths of his time, and every baby should have an interval of 8 hours unbroken sleep at night.

The habit of regular bowel action can be established in the early weeks by holding the baby out after feeds. At first 2 or 3 motions a day are passed, but these generally decrease in number, until as a rule only one is passed in 24 hours. Try to train baby to have this motion at the same time every day, say after the 10 a.m. feeding. Mothers should not make a fetish of trying to train a baby in regular bowel action, as more harm than good may be done by holding a baby out too frequently or for too long a period. Five minutes should be the longest time allowed for this process.

ROUTINE DAY FOR BABY 3 MONTHS OLD

6.0 a.m. Pick baby up, change, feed, and put back to bed.

9.0 a.m. Sunbath and kicking exercise.

10.0 a.m. Bath and dress baby followed by feed. Hold out for bowel action. Tuck down to sleep in the open air.

2.0 p.m. Change baby, feed, and after a short rest, take him for an outing in his pram.

4.0 p.m. Kicking exercise and orange juice.

5.30 p.m. Play for a few minutes with parents. Evening toilet.

6.0 p.m. Feed, hold out, and put to bed to sleep.

10.0 p.m. Feed, tuck down for the night.

Cleanliness.—Cleanliness in everything in regard to baby is most important. This applies particularly to baby's skin, clothing, nursery, food and feeding utensils.

If baby is breast fed, the mother's nipples must be kept clean by bathing them with warm boiled water before and after nursing.

If baby is artificially fed, the food must be kept clean in all stages of its preparation and storage. Bottles and teats must be kept scrupulously clean. The mother should wash her hands before commencing to feed baby. On no account should a baby be allowed to have a dummy.

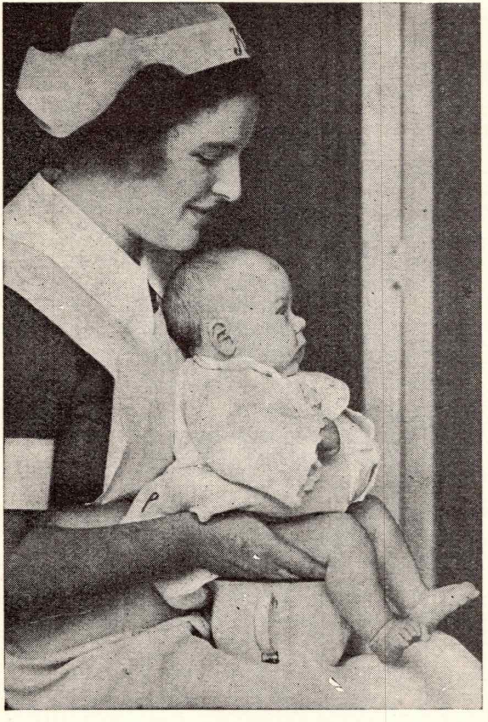
Soiled napkins should be placed in a covered bucket, removed from the room and washed as soon as possible; even those slightly wetted should never be dried and used again—they must be washed. Hands that have come in contact with used napkins should be washed immediately.

Exercise.—Exercise is taken from a very early age in the form of vigorous sucking, kicking, etc., and by the baby being handled at its bath and at feeding time and later on by crawling. A play pen in which baby can safely kick and play should be provided. This can be made from the four sides and floor of a packing case 18 inches high and about 4 feet long. The pen can conveniently be placed out of doors on a verandah or on the lawn.

At least twice a day after the first month of age, the infant should have the free unhampered use of his limbs for ten minutes or longer. Place him in his bed or pen, or on a rug in a sheltered spot, clad merely in a vest, so that he can kick freely and enjoy himself. In cold weather he should be clad in loose woollen knickers and jacket.

Sunbathing can be commenced cautiously at about six weeks of age, increasing the extent and duration of the exposure very carefully. Special care will be required in the case of blue-eyed fair children, whose skins readily become seriously irritated if hastily and injudiciously exposed. The child's eyes and back of the neck should be protected by a shady hat.

Sleep and Rest.—The habit of sleeping peacefully is one of the clearest indications of sound health. The brain and nervous system grow very fast during infancy and child-



Training in regular habits. How to hold baby over chamber.

hood, therefore an abundance of sleep is necessary during this time. A very young baby should be asleep practically all this time except when it is being fed and bathed. At six months he should sleep 16-18 hours a day; at one year 15 hours, and at 2 to 5 years 13 to 14 hours daily. If a baby is sleepless, investigate the cause and treat accordingly. He may be uncomfortable owing to wet napkins, or over-clothing. He may be cold, thirsty or hungry, or he may be suffering from irritation of the skin. Lack of fresh air, due to the want of ventilation or to nasal obstruction will cause broken sleep.

Disturbed sleep may be habitual in a healthy baby if he is badly trained or spoiled, for instance by picking him up whenever he wakes and cries. A baby should never be rocked or patted to sleep.

The day time sleep should be continued until the child goes to school, especially during the summer when children waken early. A short sleep or rest restores the child wonderfully and the result is that there is no crossness or fatigue at the end of the day. Never play excitable games with a child just before he is put to bed. Little children should not be taken out at night if it can possibly be avoided and they should *never* be taken to the pictures.

Mothering and Management, Handling, Etc.—If a child is to develop normally in mind and body, he must have loving care and wise management. Too much indulgence means spoiling, and a spoilt child is usually unhappy and a source of annoyance to those with whom he comes in contact.

A baby should never be allowed to lie passively in his cot, but his position should be changed from time to time, and a certain time should be set aside every day for "mothering"—that is—the child should be nursed in the mother's arms, carried about, and played with judiciously.

The plain meaning of the word "spoiled" is worth some reflection. Everyone grasps the full significance of spoiling a dress or spoiling a dinner, but the spoiling of a child is regarded more lightly. If parents wisely and gently regulate their baby's habits and conduct from the beginning, they will have little difficulty in guiding their children aright, and in preparing them to take their place in the world as good citizens.

BABY'S GROWTH AND DEVELOPMENT

The average baby weighs between 7 and 8 pounds at birth. He usually doubles his weight at the sixth month and trebles it at one year.

In order to ascertain if baby is thriving satisfactorily, he should be weighed regularly every week to begin with, then when he settles—fortnightly until six months, then at least every month unless he is a year old. After that, he should be weighed and measured at three to six-monthly intervals until he goes to school. Mere gain in weight, however, is not everything. A healthy child should also have firm muscle tone, good colour, and he should be active and happy.

It is also important to determine if the child's physical and mental condition is satisfactory at the different ages, hence the importance of having his health supervised at

regular intervals. This can be done at any of the Plunket Centres throughout New Zealand, where the nurses will advise if the child is meeting his milestones on time, that is, if he takes notice, responds to attention, sits up, crawls, walks, forms the right habits, cuts teeth, sees, hears, and talks when and as he should.

CHAPTER XI.

INFECTIOUS DISEASES

BRIEF NOTES AND NURSING CARE

The following should be read in conjunction with the chapter on "Asepsis" in which further details of nursing are described.

Stages through which Infectious Diseases Pass.

1. **Incubation.**—This period is the time taken by the germ to develop in the body. It begins with the entry of the germ into the body and extends until the first symptoms appear. The duration of this period varies in the different diseases.

2. **Invasion.**—This is the period during which the poisons or toxins manufactured by the germs pass into the blood and the symptoms of fever arise.

3. **Febrile Stage.**—This is the period during which the temperature reaches its highest point and the disease runs its course.

4. **Defervescence.**—This denotes the termination of the disease when the temperature drops either gradually or suddenly to normal, and the symptoms disappear.

5. **Convalescence.**—This is the period after the temperature has dropped to and remained at normal level, when the patient is gradually restored to health.

Isolation and Quarantine Periods

1. **Isolation** is the time during which the patient is infectious and must be kept away from other people.

2. **Quarantine** is the time during which those who have been in contact with an infected person may develop the disease and so may be infectious to other people. This period is usually made a few days longer than the average incubation period, in order to avoid all risk.

Immunization

Immunity or resistance is the ability of the body to defend itself against disease. An attack of the disease may give effective immunity against such a disease as scarlet fever, while injection into the body of various substances is used for other diseases. Immunization is the term given to this means of producing resistance to disease.

Several communicable diseases may be prevented by immunization. For many years vaccination against smallpox has effectively prevented this disease. More recently methods of preventing typhoid fever, diphtheria, scarlet fever and whooping cough have been discovered. When done by modern methods, immunization against these diseases is safe, harmless and almost completely certain.

Most of the infectious diseases are common, and as epidemics they may affect large numbers of people. The majority of people recover satisfactorily from these diseases, but certain dangerous complications are possible, and it is these which cause death or chronic ill-health. The strict adherance to doctor's orders, and careful nursing will prevent most of these complications.

The following is a summary of the main points only in the symptoms and treatment of the common diseases.

INFLUENZA

Influenza is an infectious disease, affecting nose, throat, and lungs, spread mainly from one person to another. It usually comes in epidemics, spreading quickly among those who meet one another most, and where numbers of people are gathered together in meetings or villages. The actual germ or virus causing the disease is not yet satisfactorily proven, but it is known that it is found in the breath, the discharges from nose, and the sputum.

Influenza is spread by these discharges from nose, throat, and lungs. Coughing, sneezing, or loud talking sends them out into the air for a distance of several feet. The sputum is dangerous as soon as it leaves the throat and mouth. The hands can carry infection if they come in contact with the discharges from mouth or throat of the sick; handling a used handkerchief from the infected person is a common mistake.

The disease spreads from person to person, from the sick to the well, or from handling clothes or things infected by the patient. The spread will be made quicker and easier

by visiting the sick, by allowing infected people to attend meetings, and by any gathering together of people in any numbers. The spread will also be made easier by bad ventilation of homes and meeting places—that is, by shut windows and stuffy rooms.

The Symptoms.

Fever coming on quickly, rising rapidly. Headache, usually severe and racking. Pains and aching in joints and limbs. Feeling of sickness.

This may last several days before recovery, but usually not more than four to six days at the most. If the symptoms have persisted for this length of time, usually the lungs are affected and there will be shortness of breath from pain in the chest; stabbing pains in chest or sides; troublesome cough, often with plenty of sputum; sometimes vomiting.

Treatment.

Put the sick person to bed until all symptoms subside. Do not wait until symptoms are severe before going to bed. Keep safe in bed until the fever has gone and the temperature has been normal one whole day. Give aspirin or aspro (two to adults) for the headache. Give a dose of castor-oil or salts to make the bowels act. Cut down the solid foods, giving plenty of drinks (lemon or orange if available), and easily digested milk foods only if the fever is high. If a hot drink, and a hot-water bottle at the feet, are given with the aspirin, sweating will occur, and the fever will be reduced. Call in the district health nurse or doctor if recovery is not quick, or if chest symptoms begin. Prop the patient up in

bed with pillows in this case, and put a pillow under the knees. For chest pain, rub the chest with liniment or oil, or put on a linseed or antiphlogistin poultice, changed two or three times daily.

Isolation Precautions.

Carry out measures as described on pages 46-49, taking particular care with discharges from throat and nose.

THE COMMON COLD

A cold is an infectious disease, though it differs in severity in each individual. It is possible for a slight cold to develop into a severe one, or even into bronchitis or pneumonia if precautions are not taken. A person with a slight cold is liable to give the germs to another susceptible person who may develop the severe symptoms.

Colds are to a great extent preventable. The resistance of the body can be increased by the use of correct foods, including cod-liver oil, and other hygienic measures as are studied under the subject of "Hygiene." It is wise to avoid being chilled by damp clothing and shoes, or by inadequate or excessive clothing. When colds are prevalent, avoid crowded buildings and tramcars whenever possible.

Treatment.—When a cold develops, the patient should take two tablets of aspirin or aspro, a hot lemon drink and a hot bath, and go to bed, where he should remain until the temperature is normal. Plenty of orange and lemon drinks should be taken, with a light diet. The bowels should open daily. Dishes used by the patient should be washed at the conclusion of the family dish washing, and should have

very hot water and plenty of soap. The attendant's hands should be washed. The handkerchief is heavily laden with infection and should not be left lying around. Paper handkerchiefs are ideal, as after one use they can be placed in a paper bag or a fire. It is dangerous at any time for an adult to use his or her handkerchief for a child or baby.

SORE THROAT

This is an infectious disease and should be considered along with colds. Particular attention must be paid to early symptoms, however, as a sore throat is liable to indicate diphtheria. Any whitish or greyish patches on the tonsils or on the back of the throat should be a warning and a doctor should be called immediately (see "Diphtheria").

Treatment.—This is the same as for "Colds." Lemon juice and honey or crushed aspirin in honey are soothing, while gargles of baking soda and salt, or of crushed aspirin in water are often beneficial. Use 1 teaspoon each of baking soda and salt in a teacup of warm water, or one aspirin crushed in one-third of a cup of water.

MEASLES

Measles is a highly infectious disease. Contrary to popular beliefs, it is a serious illness, and often ends fatally. Young children are particularly susceptible, and the younger the child, the more dangerous to life is the attack. Measles alone is responsible for more deaths in the course of a year than those due to any other infectious fever. Many of these deaths are due to want of proper care and attention.

Symptoms.

Measles usually begin like a severe cold in the head, accompanied by sneezing, a running nose, and red running eyes. When measles is prevalent, or when there is a case in the house already, the occurrence of these symptoms is almost certainly an indication that an attack of measles is beginning. Already in this early stage measles is very infectious, so that it is important to isolate a suspected case at once pending the confirmation of the diagnosis by the appearance of the rash. The rash appears on the fourth day of the illness. It is blotchy in appearance and is first seen on the face, spreading later to the body. When the diagnosis of measles has been confirmed by the appearance of the rash, the isolation of the patient must be continued for three weeks after the commencement of the illness.

Treatment.—Every case of measles, no matter how mild it may be, should be under the treatment of a doctor. While waiting for the doctor, the patient should be put to bed in a well-aired room in which there is a fire unless the weather is hot. The room should be at an even temperature—about 65° F.—and though well ventilated, draughts should be avoided. The patient will be kept in bed while the temperature is raised and the rash out, and even when allowed up, care is necessary to avoid chill. The rash may be extremely irritable, and may be bathed with a solution of baking soda (1 teaspoon soda to 1 cup warm water). *The light should be kept shaded, and all reading forbidden while catarrhal symptoms are present.* If the eyes are inflamed, they should be bathed with boracic lotion. A steam kettle or inhalations may be ordered to ease the cough.

Isolation Precautions.—Carry out measures as on pages 46-49, with particular attention to discharges from the throat and nose.

Convalescence should be extended until all discharge from the nose, throat and ears has disappeared. Great care must be taken to avoid chill.

Complications that may occur are bronchitis, bronchopneumonia, and inflammation of ears and eyes.

GERMAN MEASLES

This is usually a milder disease than measles proper, but the same treatment and isolation precautions are required. The glands of the neck may be swollen.

SCARLET FEVER

Scarlet fever is a very infectious and serious disease. Grown people may catch scarlet fever, but children under fifteen years are most likely to have it, if exposed. On account of the infectivity of the disease a patient must be isolated in hospital as soon as the disease is recognised, unless the facilities for isolation and treatment at home are exceptionally good.

Scarlet fever is spread through discharges from the nose and throat and sometimes from the ears. The person just going down with scarlet fever, or in the first stages of the disease, is most likely to give it to others.

Symptoms.

The onset is sudden, marked by headache, sore throat, vomiting, giddiness, and a rapid rise of temperature and

pulse-rate. The pulse-rate is usually so rapid that it is out of all proportion to the temperature. The tongue is furred, with raised spots on it, giving its characteristic appearance known as "strawberry tongue." A fine rash usually appears on the first or second day, beginning on the neck and chest and rapidly spreading all over the body. The face is brightly flushed.

Treatment.

The patient is under the care of a doctor who is required by law to report the case to the Health Department. The modern treatment frequently consists in the use of scarlet fever antitoxin serum. The patient is usually kept lying flat with one or two pillows.

In all cases of acute infectious disease the patient should be bathed in bed at least once daily. A specimen of urine is usually tested daily to watch for any signs of kidney trouble. The greatest care must be taken to avoid chill, especially during convalescence.

Plenty of fluid to drink should be given throughout the disease.

Isolation Precautions.—As on pages 46-49, with special care of the highly infectious discharges from the throat, nose and ears.

Convalescence.

Convalescence usually starts on the tenth day and should be prolonged, with the greatest care until about the fourth week, as doctor orders.

Complications.

Complications may be kidney disease or nephritis, inflammation of the ear, mastoid-abscess, and rheumatism.

CHICKEN POX

This is usually a mild disease, though it requires to be treated with care. The rash appears in the first 24 hours of the illness, and is often the first sign. The spots usually appear first on the back, shoulders and chest, and then quickly spread all over the body. They first appear as small raised red areas, which may resemble bites of insects. In a few hours these papules, as they are called, become filled with fluid, and may later change to pustules. "Scabs" usually take about three days to form.

Treatment.—The patient is kept in bed until the temperature is normal, and care must be taken to prevent the patient scratching the spots and thus causing scarring. The skin may be bathed with weak antiseptic lotion, or baking soda (1 teaspoon to 1 pint of water) to allay the irritation.

Isolation must be maintained until the last scab has disappeared.

MUMPS

This disease may attack adults or children.

Symptoms.—It usually comes on suddenly, with a rise of temperature, and swelling of the glands below the ear, which spreads forwards and downwards. These glands may be very painful, making any movement of the jaw difficult.

Treatment.—The patient should remain in bed until the swelling has disappeared. If swallowing is difficult, food may have to be given in fluid form for a few days. Hot fomentations on cotton wool and bandage over the affected glands are used to relieve the pain.

Isolation Precautions are the same as for other infectious diseases.

Convalescence.—The patient should avoid chills when he first gets up; he must be isolated for a week after the swelling has subsided.

Complications may arise when other glands in the body become affected.

DIPHTHERIA

The disease is caused by a special germ which attacks the mucous surfaces of the nose, throat and larynx (or voice box), either separately or collectively, and causes a false membrane to form over the surface. There are three forms of the disease—nasal, faucial and laryngeal.

Diphtheria is a dangerous, infectious disease that has caused the death of many children. It can also attack adults. It often comes on with only slight symptoms, such as sore throat, chilliness, a little fever or aching pains, and may be mistaken for tonsilitis or laryngitis. Even when the symptoms are slight there is great danger.

TREATMENT

This disease is also notifiable by the doctor to the Health Department. The modern treatment of diphtheria consists in the giving of diphtheria antitoxin serum in one or more doses. This method of treatment is an almost certain cure if the antitoxin serum is administered early enough; hence the importance of recognising the disease as soon as possible, and commencing the treatment without an hour's delay. The patient is usually nursed in hospital.

The patient is kept lying flat in order to spare the heart every possible exertion. For this reason also he should not

be allowed to do anything for himself during the early stage of the illness. When swallowing is painful and difficult, small quantities of fluid and concentrated nourishment should be given frequently.

Isolation Precautions as on pages 46-49; the nurse should wear a mask over the nose and mouth, and goggles when treating the patient's throat, when he is liable to cough up pieces of membrane.

Convalescence.

Convalescence is slow and protracted, owing to the profound toxaemia which accompanies the disease and its weakening effect on the muscles of the heart.

Complications.

Broncho-pneumonia, heart muscle weakness, inflammation of the ear, laryngeal obstruction, kidney disease, paralysis of soft palate, eye muscles, arms and legs, respiratory muscles and diaphragm.

Prevention.—Diphtheria can be prevented by immunization.

TYPHOID FEVER

Typhoid fever is always a serious disease, with a high fever lasting some weeks, abdominal pain, and bowel disorder. It is caused by a germ taken into the body through the mouth. These germs settle in the walls and glands of the intestines, making ulcers there. They leave the body mainly in the fæces and urine, also sometimes in the vomit and discharges from any abscess on the patient.

Symptoms.

The symptoms are:—

At the beginning.—Malaise; headache; nose bleeding; bronchitis or chest symptoms are very common; fever.

After a week.—Patient looks very heavy and flushed, with high fever; dry lips and mouth, tongue dirty and raw; stomach-ache; bowels generally loose, with a diarrhœa of a pea-soup nature; patient complains of thirst, headache, and there is great weakness.

Symptoms are sometimes less definite and patients may feel well enough to go about. They are ill, however, and a danger to others.

Treatment.—In every case the patient must be under the care of a doctor. Nursing plays a very big part in the recovery, and the patient will always be under the care of a registered nurse, and usually in a hospital. Voluntary aids would be able to assist the nurse in severe epidemics.

The patient is kept lying flat and very quiet and is spared every unnecessary movement. If he has to be moved in any way two people are required to attend him; this applies to a child as well as to an adult. His position will be changed frequently, and his pressure points treated about two-hourly. The mouth requires frequent care. The diet is ordered by the doctor, and consists of foods of high calorie and high protective value. The nurse must follow instructions most carefully. Haemorrhage and perforation of the bowel are possible complications, and rest and correct diet are important preventive measures.

Isolation Precautions as on pages 46-49. In addition, all fæces and urine must be placed in equal quantities of lime

or in 1 in 20 carbolic; fæces must be broken up with a stick kept for the purpose. These discharges must stand for two hours before being put down the W.C. or buried. All clothing from the bed or patient is placed immediately into disinfectant. (See page 42). The attendant should not handle or prepare food of others.

Inoculation against Typhoid.—A person or community can be protected against typhoid by having inoculations every year or so. Every man, woman and child should take advantage of this safeguard when typhoid is prevalent or possible in any district.

Particular Precautions in preventing typhoid fever in particular areas.—Boil water, milk and watercress if used. The water used in the washing of milk cans, vegetables, and hands should also be boiled.

Leave shell-fish alone, if these have been eaten and are suspected of causing an epidemic. Shell-fish beds that have caused typhoid fever in the past should be abandoned.

Privies should be flyproof and clean.

Rubbish should be burnt or buried to prevent fly-breeding.

Keep food in cupboards safe from flies, and keep flies off exposed food on tables.

Cleanliness inside and outside the home—be clean.

WHOOPING COUGH

Whooping cough is a very infectious and dangerous disease which frequently attacks infants and young children. On account of the infectiousness of the disease, it is important to isolate a patient from others as soon as the symptoms

of whooping cough are recognised. Young children are particularly susceptible to whooping cough, and the younger they are the more dangerous to life is the attack. Contrary to popular belief, whooping cough is a very serious disease, and is a frequent cause of death in young children. Measles and whooping cough together are responsible for more deaths than all the other infectious diseases.

Symptoms.

Usually the first sign of whooping cough is a feverish cold. During an epidemic of whooping cough, or when a case is present in the house or at the school at which the child attends, the occurrence of a cold should lead to the suspicion that an attack of whooping cough is beginning. At this early stage, whooping cough is so highly infectious that it is important to isolate a suspected case at once pending the confirmation of the diagnosis by the subsequent course of events. A cough soon develops and, very shortly, occurs in paroxysms at more or less frequent intervals. Vomiting is common. At a later stage the characteristic whoop may appear, but, in some cases, this symptom is absent. If the isolation of the patient has been postponed until the whooping stage is reached, a great deal of harm due to the infection of others will have resulted.

Treatment.

The introduction of whooping cough vaccine has helped a great deal, especially in the early stages of whooping cough. ***Every case of whooping cough should be under the treatment of a doctor.*** While waiting for the doctor, the patient should be put to bed in a well-aired room in which there is a fire, unless the weather is hot. During the acute

stage, bed is necessary and during convalescence avoidance of chill is essential if complications are to be avoided.

Whooping cough is a most exhausting disease and everything possible should be done to support the patient's strength and prevent complications. Frequent small meals are of greater value than a few heavy ones. Too large a serving is apt to discourage the patient. Not too much liquid should be given with meals, but plenty between. If vomiting occurs patient should be re-fed within twenty minutes and extra feedings should be in readiness in case they are needed. Over-excitement of any kind should be avoided, as it tends to provoke a paroxysm.

Isolation Precautions as on pages 46-49.

Complications.

Complications may relate to the chest—*e.g.*, bronchitis, broncho-pneumonia.

Prevention.—Whooping cough can be prevented by immunisation.

TUBERCULOSIS

Tuberculosis is a communicable disease caused by the action in the body of a germ called the tubercle bacillus. It is strictly an infection; that is, an individual cannot develop tuberculosis unless germs gain entrance to the body from outside sources. The source is nearly always some other individual who has the disease. Unpasteurised milk from tuberculosis cows can be a source of infection. Development of the disease in an individual depends upon the number of germs which enter the body and the condition of the individual at the time. A person run down in health—*i.e.*, with a low resistance—can develop the disease more readily,

but even a healthy individual receiving a sufficient number of germs into the body may develop tuberculosis.

Tuberculosis is never inherited. It occurs frequently in families because it is in the family that the most intimate and frequent contact occurs. In a family, an individual with tuberculosis can readily pass the disease on to other members of the family, *i.e.,* infection occurs any time after the birth of a child.

Tuberculosis, in the vast majority of cases, centres in the lungs and is termed "pulmonary tuberculosis." The individual with pulmonary tuberculosis passes on his disease by coughing, sneezing, kissing, and by means of utensils and clothing used by him. The individual receiving the infection does so through the medium of the nose and mouth. Tuberculosis germs, therefore, enter the body most frequently by being inhaled. They may also be introduced by drinking unpasteurised milk from tuberculous cows.

Tubercle bacilli, if they gain a hold on the body, begin to multiply and the body resists their increase. When the germs are said to be in check and there is no actual disease the person is said to be *infected.* When the germs gain the upper hand and there are progressive tuberculous changes in the body, the person is said to have tuberculous disease. Infection is the seeding; tuberculous disease is the harvest.

Early Signs and Symptoms.

Weakness or easily brought on fatigue; a cough that hangs on over six weeks; indigestion and poor appetite; pain or soreness in the chest. Pleurisy is often an early manifestation of tuberculosis; loss of weight; spitting of blood. This is often a late sign, but may occur in an early stage.

Precautionary Measures.

Anyone suffering from one or more of these symptoms should consult his family physician. If a tubercular skin test is positive the patient would be given a complete physical examination and an X-ray of the chest. Any sputum will be examined at the laboratory. Early diagnosis means a great deal as tuberculosis in its early stages is practically always curable.

Treatment.

The doctor reports to the Department of Health all patients found to have tuberculosis. Any person, including children, who has been in contact with an infectious case of tuberculosis should have an examination by a doctor. The doctor orders or performs whatever special treatment is necessary for the patient.

An abundance of fresh air is necessary. The patient is usually kept in bed if temperature is raised, and different stages of rest treatment are ordered. If ordered, it must be strictly enforced. The patient must be kept happy and free from anxiety. He is often distressed at the knowledge that he must rest for some months, or that he may not return to his usual occupation. The nurse or relative must provide an interest in either reading or companionship, or some occupation which will make the patient feel he is counting for something. "Occupation therapy" is now a recognised part of the treatment of these patients.

The diet should tempt the appetite and provide foods which will increase resistance. Those listed under the chapter on this subject are the ones required, though particular care will be necessary in the variety, preparation and serving.

Any blood which may be coughed up should be saved and the doctor informed; the patient should be kept quiet and reassured.

Isolation Precautions.—These are the same as for other infectious diseases, but because the illness is a long one and the patient sensitive, particular tact and good management are required. Complete protection can be assured for the nurse and the other members of the family if the isolation precautions are carried out completely and the patient will co-operate if he understands the plan. (See pages 46-49).

BRONCHO-PNEUMONIA

Broncho-pneumonia is inflammation of the bronchial tubes and is very common amongst infants and young children, especially in connection with whooping cough and measles. Insufficient clothing, chill and excessive confinement in over-heated, poorly-ventilated rooms are the predisposing causes.

Symptoms.

The child is very ill; he is flushed and may be blue. The *Temperature* is high, 101-105, and continues to remain high for 5-7 days with slight daily remissions. *Respirations* are rapid, 50-60 per minute; there is difficulty in breathing with movement of the nostrils and sucking in of the intercostal muscles. The *Pulse* is rapid, over 120, and becomes weak and running in character as the disease progresses. Cough is short and dry but has no expectoration as small children do not expectorate. At first the child is restless but as the days pass toxaemia increases and the patient becomes drowsy.

Nursing Treatment.

A doctor must always be called in early.

Select a warm, well-ventilated, sunny room free from draughts. The child should be propped up in bed so that his head and shoulders are raised. The temperature of the room should be maintained at 65° F. Some physicians like a moist atmosphere and a steam tent may be erected over the bed. The chest may be rubbed with warm camphorated oil morning and evening and covered with thermogene wool. The personal clothing should be light and warm and the child protected from chilling. A daily sponge bath is necessary in order to promote a healthy skin action and also to assist in the general comfort of the patient.

Temperature, Pulse and *Respirations* should be taken and recorded every four hours. The *Bowels* should be kept open daily.

The Sulphonomides and Penicillin are always used in the treatment but are ordered only by the physician.

Diet.

Fluids in the early stages—nature and strength according to the age of the child. As the temperature falls increase diet accordingly.

Convalescence is fairly rapid and the child should have a good, liberal, nourishing diet and if possible a change of air.

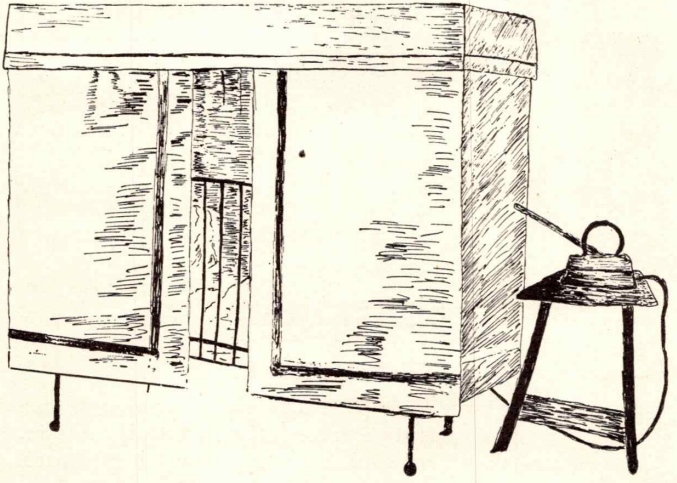
THE STEAM TENT

Requisites.

A tent frame or two large towel-horses, two wooden poles, one blanket, two sheets, electric kettle and stand or chair.

Method.

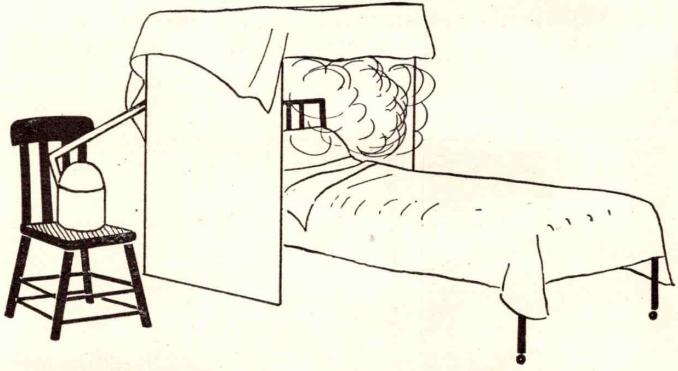
The frame is attached to the bed in order to form a canopy. Place the blanket over the top. (The object of the blanket is that it absorbs the moisture more readily than a sheet.) The sheets are draped around the sides and are tied or pinned leaving an opening one side of the tent away from the window or door. A thermometer is hung inside the tent, an even temperature must be maintained, 70-75° F. The kettle is filled with boiling water and placed on a stand at the foot of the bed. The spout of the kettle is introduced into the tent through an opening in the sheets—it may be necessary to apply an extra length of piping or rubber



Steam tent (electric as arranged in a hospital.)

tubing to the spout of the kettle in order to get sufficient length to allow the steam to enter the tent. A small receptacle should be hung over the spout to catch the drips. If an electric kettle is not available a spirit stove may be used, in which case extra care must be exercised to guard against fire.

N.B.—A child, when nursed in a steam tent, requires constant supervision and should not be left as there is the great danger of the child touching the spout of the kettle.



A steam tent which can be arranged in a private home. The spout is seen entering the tent at the head of the bed. A clothes horse can be used around a cot, with sheets draped over it.

POLIOMYELITIS

Acute anterior poliomyelitis is an acute infectious disease caused by a virus having a special affinity for the anterior horn cells of the spinal cord, the motor cells which control movement of muscles. The motor cells of the brain may on

occasions be affected and, more rarely, other portions of the nervous system, producing a multiplicity of symptoms, according to the part attacked. There is normally a very strong resistance to the disease, and during an epidemic for every recognised case there occur perhaps hundreds of infected people who present only mild symptoms and suffer no after-effects. In this way a very large portion of the community is rendered immune to further attacks of the disease.

The exact manner of spread is not clearly understood, but it is definitely known that poliomyelitis is an infectious disease, and that it is caused by a virus which may be recovered from the nose and throat discharges and, for a longer period, from the bowel discharges of patients and persons convalescing from the disease and close contacts of these. It is therefore likely, and indeed there is every reason to believe, that the disease is spread by droplet infection, in the same way as the common cold, and also by contamination from bowel discharges in the same way as dysentery and other similar diseases.

The disease does not normally exist in animals, though it can be experimentally transferred to the monkey and certain strains to rodents. Blood-sucking insects are probably not responsible, for the virus can very rarely be recovered from the blood stream. Flies may play some part in the spread in the same way that they help to spread dysentery, but they are not thought to be a very significant factor.

The symptoms are fever, headache, vomiting, sore throat, drowsiness and listlessness or restlessness and irritability, pain and stiffness in the neck and back, and pain and tenderness in various muscles. All or only a few of these symptoms may be met with in the mild cases without

further trouble. In the frank case paralysis develops. A small group, even a single muscle, or nearly every muscle of the body may be affected. There may be complete paralysis of one or more limbs, or merely a weakness of some particular movement. If the brain stem is affected, there may be paralysis of the face or eye muscles, and also difficulty in swallowing or difficulty in breathing through damage to the higher centres controlling this function. If the muscles of respiration are affected there may be difficulty in, or complete failure of respiration, and death is usually due to this cause.

Treatment.

Complete rest in bed from the very early stages is essential, and during an epidemic children suffering from any unrecognised illness should be put to bed and medical advice sought. Rest in the early stages may, it is thought, sometimes prevent the onset of paralysis and lead to complete recovery, or it may at least minimise the extent of the paralysis.

Preventive Measures.

Fatigue during the early stages does undoubtedly lead to a more severe form of the disease and should be avoided by all those exposed to infection and by all children during an epidemic. Chilling has the same effect, as has also any damage to the mucous membranes—for example, tonsil and adenoid operations, teeth extractions and nasal operations—and such operations should be avoided whenever possible during an epidemic. The uncertainty as to the manner of spread creates some difficulty in control, but the main difficulty arises from the vast number of mild unrecognised cases which are just as infectious as the frank

case. Recognition of this fact by the public generally and the segregation of all children suffering from any unrecognised illness during an epidemic would do a great deal towards limiting the spread. The incubation period is from 7 to 10 days, though it may possibly be longer, and the quarantine of contacts for 14 days is considered desirable. Many cases have been traced to close personal contact with abortive or paralysed cases or the close contacts of these, and during an epidemic children should as far as possible be kept away from these.

HEART DISEASE

(This is not an infectious disease but is included here because it has so often to be nursed at home.)

It would not be possible in this book to discuss this disease at any length, but some essential points in the nursing care might be useful.

The patient will in every case be under the care of a doctor, who will order the details of treatment. In some forms of this condition, the recumbent position is necessary; the patient is never permitted to sit up, and as convalescence is established, one pillow at a time is allowed until the patient is able to sit upright.

Chronic Heart Disease.

In this form of heart disease, the patient cannot lie down because of difficult breathing. He must therefore be carefully propped up and remain night and day in a sitting position. The arrangement of pillows to make a comfortable position is a test of a nurse's ability and imagination; a table over the bed on which a pillow is placed is useful for a patient who finds it necessary to lean forward. Sometimes these patients are allowed to sit up in an arm chair or to

place their legs over the side of the bed because of the difficulty of securing comfort in bed. The legs may be raised on pillows and a cradle over the legs adds to the comfort. Every exertion must be spared the patient, and in many cases it will be necessary for two people to assist with sponge bathing, etc. The patient may have to be fed by the nurse. Especial care is necessary to prevent bed sores, and pressure points may require treating every 3 or 4 hours. An air ring or water pillow is useful.

Diet is ordered by the doctor. The main principle is to give small meals more frequently than usual and of easily digested foods. Fluids may be ordered to be given between meals and they may be limited in amount.

CHAPTER XII.

URINE TESTING TECHNIQUE

Main Principles:

(1) Accuracy of test and recording.
(2) Cleanliness of utensils, surroundings and hands, and neatness of procedure to avoid infection.
(3) Avoid burning of bench with chemicals.

Value of Urine Testing:

In many pathological conditions, marked changes occur in *the nature or the proportion* of the constituents of urine. Examination of urine, therefore, is of great value in ascertaining *the presence* or *the progress* of disease.

Requisites:

Stand with test tubes.
Spirit lamp or Bunsen burner and tripod.
Box of matches.
Two pipettes.
Test tube holder.
Small bowl for boiling specimens.
Small kidney tray.
Urinometer.
Litmus paper—red and blue.
Filter paper and funnel.

Small bowl of clean water for rinsing.
Note book and pencil.
Acetic acid 33 1/3%.
Benedict's solution.
Sodium nitro prusside 5%.
Ammonium sulphate crystals.
Liq. Ammon. Fort.
Nitric acid.
Esbach's re-agent.
Alcoholic Iodine ½%.

All urine testing solutions should be kept in a locked cupboard.

Collection of Specimens of Urine for Ward Testing:

1. The specimen is received into a clean boiled bed pan or urinal.
2. Sufficient for test (6-8 ozs.) is placed in a specimen glass, clearly labelled and covered, with patient's name and date.

Precautions in Preparation:

Urine must be fresh and when possible taken from an early morning specimen and should be well stirred before pouring into test tube.

Write down findings at once.

Care of Nurse's hands *(a)* careful handling of strong chemicals to avoid burns, *(b)* Thorough washing of hands at termination of procedure to prevent infection.

When boiling urine over a flame, hold the test tube with the open end away from the operator.

Protect the bench with newspaper, unless it has a glass top.

Select bottles for each test and place in order of use.

Replace each cork before removing the next.

Replace one set of bottles before setting out the chemicals required for next test.

Rinse pipettes thoroughly between each use.

Procedure:

(1) ***Colour, appearance*** and ***odour*** are noted.

(2) ***Specific gravity:***

Place the urinometer in a specimen glass containing sufficient urine to allow it to float freely without touching the sides. Read the figure from the lower level of the meniscus which forms round the stem, not the edges of the meniscus. Remove the urinometer, rinse, and replace in container.

(3) ***Reaction:***

Take a piece of blue litmus paper and immerse one end in the urine.

Compare the colour with the dry paper.

Repeat the procedure with red litmus paper.

Discard pieces of litmus into a receiver or paper.

Result: Blue litmus turned red indicates acid reaction.
Red litmus turned blue indicates alkaline reaction.
No change indicates neutral reaction.

(4) ***Albumin:***

If the urine is not clear, it should be filtered before the test is made.

A black board or paper is useful background when looking for the cloud.

Heat Test:

Fill a test tube three parts with urine.

Heat the upper third to boiling point over a flame.

A cloud may appear due to either phosphates or albumin.
Add a few drops of acetic acid.

Result: If cloud remains, albumin is present.
If cloud disappears, phosphates are present.

Cold Test:

Place $\frac{1}{2}$ inch of nitric acid in a test tube.
Slant the tube and with a pipette gently run eight or ten drops of urine down the side of the tube.
Raise the tube slowly to vertical.

Result: A white precipitate at the junction indicates albumin.

(5) ***Sugar:***

Benedict's Test:

Pour one inch of Benedict's solution into a test tube.
(If using a narrow test tube use $1\frac{1}{2}$ inches of Benedict's solution).
With a pipette add eight drops of urine.
Shake well.
Stand in water bath and boil for 5 minutes.
Remove from bowl and leave standing till cold.

Result: If there is no deposit, no sugar is present.
If the urine is green with a yellow deposit record as +.
If the urine is yellow record as ++.
If the urine is orange record as +++.
If the urine is brick red record as ++++.
Alternatively, the result may be recorded as nil, green with yellow deposit, yellow, orange or red.

Tests for Normal Constituents of Urine:

(6) ***Urates:*** If the urine is cloudy but clears on heating, urates are present.

(7) ***Phosphates:*** If the urine becomes cloudy on heating add a few drops of acetic acid.

Result: If the cloud clears phosphates are present.

Termination of Procedure:

Rinse all test tubes and specimen jars under cold running water.

Wash in warm soapy water, cleaning thoroughly with a bottle brush.

Drain and replace in cupboard.

Rinse the urinometer in cold water, dry, and replace in container.

Empty the kidney tray and rinsing bowl. Boil for 5 minutes.

Rinse the pipettes thoroughly and store in a dry glass jar. (Immersion in water injures the rubber).

Wipe all bottles used.

Replace all equipment neatly in the cupboard.

Discard newspaper used on bench.

Wash and dry hands.

Blood and *pus* in small quantities can only be detected by the microscope.

In large quantities they can be seen with the naked eye.

In either case, ward testing is not considered satisfactory, and specimens should be sent to the laboratory.

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